A cross-sectional study on personality, coping strategies and quality of life of a single child and with siblings among undergraduate health profession students in Tamil Nadu

**ABSTRACT**

Background: Over the years, there is an increase in the prevalence of single-child families due to the declining fertility rate, to improve socioeconomic status, and promotion of family planning policies. Studies from other countries revealed psychological issues in the single child; this study aims to determine the differences in personality, coping strategies, and quality of life (QOL) of single child and one among siblings group among undergraduate health professional students of an educational group in Tamil Nadu.

Methods: A cross-sectional study design with universal sampling was used to collect data from 890 consenting undergraduate students. Instruments used were semi-structured pro forma to collect sociodemographic details, Eysenck Personality Inventory (EPI), Coping Strategies Inventory-Short Form, and WHOQOL-BREF. Descriptive statistics of mean, standard deviation, percentages, and independent t-test along with Spearman’s correlation tests were used to analyze data and compare groups.

Results: A total of 863 study participants’ data were included in the analysis. About 8.92% (n = 77) of participants were single child, and >87% were from urban background. About 47% of respondents were from medical. Single female child had higher mean extroversion scores and used problem-focused disengagement strategies than females with siblings. The number of siblings was negatively correlated with the disengagement score. No difference noticed in QOL domains between the groups. Conclusion: This study did not find any significant difference in personality dimensions, coping strategies, and QOL between single child and those with siblings. However, a positive association was observed between extroversion, engagement coping strategies, and QOL.

Keywords: Coping strategies, health profession students, personality, quality of life, single child

Population in India had continued to grow steadily over the years. Although it has slowed down as per the 2011 census, it will become the most populous country in the world over the next decade.[1] In addition to family...
planning policies by our government to control population explosion, certain other factors such as declining fertility rate, women empowerment, economic issues such as securing a job, increased cost of living and education and health issues had contributed to the increasing percentage of single-child families. A study conducted in Puducherry reported a prevalence of single-child families to be 9.3%. The determining factors were parental education, especially female education and mothers working status.\(^{[8]}\)

Being a singleton or one with siblings has their own advantages and disadvantages, which in turn might influence the psychosocial well-being. A study conducted in Beijing observed that singletons excelled the sibling children on achievement motivation, yet had similar interpersonal skills and attitude toward manual labor. Gender differences were observed with girls consistently receiving higher ratings on achievement motivation and interpersonal skills.\(^{[4]}\) Researchers from Korea and China assessed the psycho-social factors underlying the mental health problems of single child high school students and reported that in the single child group, anxiety, interpersonal dependence, perceived stress, and the tendency for stress and depression was significantly higher.\(^{[5,6]}\) The difference was significantly higher for single girls.\(^{[7]}\) The factors responsible were found to be influenced by friends, a sense of satisfaction at school and home life, and emotional support as well.\(^{[9]}\) On the contrary, studies from Brazil and the USA showed that singletons had better educational achievements and less likely to get intoxicated. In fact, they performed better on most aspects than one among multiple siblings.\(^{[8-10]}\)

It is evident from the above review that there were findings suggestive of psychological issues in single child from other countries and limited data from India the authors decided to conduct this study to determine the difference in personality, coping strategies and quality of life (QOL) of single child and one among sibling children.

**METHODS**

**Study design and participants**

The cross-sectional study was conducted after obtaining the Institute ethical clearance in January 2017. Data were collected from students aged 18 years and above, enrolled for undergraduate training in a private Medical, Dental, and Nursing college located in Mathuranthagam Taluk of Tamil Nadu. All students from 1\textsuperscript{st} year through internship were invited to participate in the study. Survey instruments were distributed at the end of the lecture class after the extensive introduction of the study by the researcher. It was explained that refusal to participate in the survey would have no academic consequences. Each participant received a short description of the research objectives with consent form and a copy of the survey instruments. The survey instruments took approximately 30 min to complete. No incentives were provided for participation.

Out of the total 1123 invited students, 890 agreed to participate and completed questionnaires with the response rate of 79.25%. Twenty-seven participants were excluded from the analysis due to incompletely filled out questionnaire resulting in a final sample of 863 participants.

**Instruments**

**Semi structured proforma**

Used to collect socio-demographic data on age, gender, religion, residence, education, annual income, number of siblings, total number of family members.

**Eysenck’s Personality Inventory (extroversion/introversion)**

It was developed by Hans, and Sybil Eysenck measures two personality dimensions, Extraversion-Introversion and Neuroticism-Stability, which account for most of the variance in the personality domain. Each form contains 57 “Yes/No” items with no repetition of items. Eysenck Personality Inventory (EPI) gives three scores. The “lie score” is out of 9. It measures how socially desirable they are trying to be in their answers. Those scoring 5 or more on this scale are probably trying to make them look good and are not being totally honest in their responses. The “E score” is out of 24 and measures how much of an extrovert a person is. The “N score” is out of 24 and measures how neurotic a person is.\(^{[11]}\) The Cronbach’s Alpha for individual dimensions were 0.89 for extraversion, 0.92 for neuroticism, and 0.78 for the Lie scores.\(^{[12]}\)

**Coping strategies inventory short form**

This brief 16-item scale was derived from the 78-item Coping Strategies Inventory. The items are rated on a 5-item Likert scale from 1 to 5 rated as never, seldom, sometimes, often, and almost always. The different forms of self-reported coping responses that are generally used when faced with difficult situations are evaluated through this scale. Coping responses are classified into emotion-focused and problem-focused, which are further subclassified as either engagement type or disengagement type of strategy. The Cronbach’s Alpha ranged between 0.58 and 0.72 for all dimensions with the goodness of fit index of 0.95.\(^{[13]}\)

**WHO quality of life-BREF**

The 26-item WHOQOL-BREF scale encompasses physical health (8 items); psychological health (6 items); social relationship (3 items); environment (8 items), and overall QOL (1 item). It assesses the individual’s perception in
the context of their cultural and value system and their personal goals, standards, and concerns. The participants were required to evaluate their QOL during the past 2 weeks. The item scores ranged from 1 to 5, with a higher score indicating a better QOL for the corresponding item. The 26 BREF version and 100 items full version have an internal consistency of 0.94.[4]

Analysis
Data analysis was performed using IBM SPSS Statistics for Windows, Version 20.0, Armonk, New York, USA. Descriptive statistical analysis included mean, standard deviation, and percentages. Independent samples t-test, Mann–Whitney U–tests, and Chi-square test was used to compare single child and with siblings and between gender was also done. Spearman’s correlation coefficient was used to quantify the association between number of siblings, personality traits, and QOL. A P < 0.05 considered statistically significant.

RESULTS

The study involved 863 (female = 603) participants with 8.92% (n = 77, male = 26; female = 51) of them were single child. About 87.37% of students were from urban background. About 87.6% of the participants were Hindus, followed by 8% Christians. 46.7%, 34.65%, and 18.65% of our respondents were from Medicine, Dentistry, and Nursing, respectively. There was a significant difference in the mean annual household income and the total number of family members between the two groups [Table 1].

On the EPI, there appears to be no significant difference between the two groups. A subgroup analysis based on gender showed a significant difference in the mean extroversion scores in females. The single female child had higher mean extroversion scores than females with siblings. There were no significant differences in the variables in the male group, as depicted in Table 2. Within-group analysis to look for gender differences in single child showed no significant difference, whereas males and females scored higher in the extroversion-introversion scores in the siblings group, and the differences were statistically significant, as shown in Table 3.

Coping Strategies Inventory-Short Form variables included in the analysis did not show any differences between the two groups as a whole. However, single female child had used problem-focused disengagement as a coping strategy, and the difference from the female with siblings was statistically significant with a value of P = 0.04. There were no statistically significant differences observed in any other measures in females and all measures in males [Table 4]. The results of within-group analysis [Table 3] showed females of both groups scored higher compared to their male counterparts in problem-focused engagement as a coping strategy, and the difference was statistically significant. However, significant statistical difference was observed with males using problem-focused disengagement as a coping strategy more than females in the sibling group (P = 0.013).

The QOL measures, including the four domains (physical health, psychological health, social relationship, and

Table 1: Sociodemographic data between Single child and Siblings group

| Variable                        | Single child | Siblings   | χ²/F | P (95% CI)   |
|---------------------------------|-------------|------------|------|--------------|
| Number of students (n=863), n (%)| 77 (8.92)   | 786 (91.08)| 0.114| 0.35 (−0.19−0.53) |
| Age (year)                      | 19.77±1.53  | 19.59±1.49 |      |              |
| Sex                             |             |            |      |              |
| Male=260                        | 26          | 234        | 0.532| 0.47         |
| Female=603                      | 51          | 552        |      |              |
| Locality                        |             |            |      |              |
| Rural                           | 5           | 104        | 2.885| 0.89         |
| Urban                           | 72          | 682        |      |              |
| Religion                        |             |            |      |              |
| Hindu                           | 70          | 686        | 0.982| 0.81         |
| Muslim                          | 2           | 33         |      |              |
| Christian                       | 5           | 64         |      |              |
| Others                          | 2           |            |      |              |
| Education, n (%)                |             |            |      |              |
| Medical                         | 47 (11.66)  | 356 (88.34)| 8.426| 0.02         |
| Dental                          | 23 (7.69)   | 276 (92.31)|      |              |
| Nursing                         | 7 (4.35)    | 154 (95.65)|      |              |
| Household annual income in rupees| 627792±235090| 543696±237601| 0.206| 0.03 (694.35−161251.21) |
| Total number of family members  | 3.21 (0.59) | 4.6 (1.14) | 22.92| <0.001 (−1.65−1.13) |

CI – Confidence interval
Table 2: Group comparison and gender differences in Eysenck Personality Inventory

| Groups | Variables | Single child | Siblings | Z  | P   |
|--------|-----------|--------------|----------|----|-----|
|        | Mean±SD   | Mean Rank    | Mean±SD  | Mean rank |
| Overall| Extroversion | 12.31±3.74  | 466.07   | 11.74±2.89 | 428.66 | -1.26 | 0.21 |
|        | Neuroticism | 14.25±4.37  | 436.97   | 14.04±4.21 | 431.51 | -0.18 | 0.85 |
|        | Lie scores  | 3.86±1.72   | 431.92   | 3.84±1.70   | 432.01 | -0.003 | 0.99 |
| Males  | Extroversion | 11.96±3.77  | 121.96   | 12.15±2.72  | 131.45 | -0.61 | 0.54 |
|        | Neuroticism  | 13.19±3.6   | 124.12   | 13.56±4.64  | 131.21  | -0.46 | 0.65 |
|        | Lie score    | 3.65±1.47  | 132.19   | 3.69±1.68  | 130.31  | -0.12 | 0.90 |
| Female | Extroversion | 12.49±3.75  | 345.24   | 11.57±2.95  | 303.33  | -2.498 | 0.013 |
|        | Neuroticism  | 14.78±4.65  | 318.16   | 14.25±4.04  | 300.51  | -0.69 | 0.49 |
|        | Lie score    | 3.96±1.84   | 303.33   | 3.91±1.70  | 301.88  | -0.06 | 0.95 |

SD – Standard deviation

Table 3: Within group comparison for sex using Mann-Whitney U-test

| Measures | Variable | Forms | Male (n=26) | Female (n=53) | Z  | P   |
|----------|----------|-------|-------------|--------------|----|-----|
|          |          | EPI   | 36.60       | 40.23        | 0.68 | 0.50 | 425.90 | 379.77 | -2.64 | 0.009 |
|          |          | Neuroticism | 34.00      | 41.55        | -1.41 | 0.16 | 373.17 | 402.12 | -1.64 | 0.10 |
|          |          | Lie score | 37.21       | 39.91        | -0.51 | 0.61 | 370.38 | 403.30 | -1.89 | 0.06 |
|          |          | CSI-sf | 29.65       | 43.76        | -2.63 | 0.008 | 332.01 | 419.57 | -4.97 | <0.001 |
|          |          | PFE    | 37.35       | 39.84        | -0.47 | 0.64 | 424.33 | 380.43 | -2.498 | 0.013 |
|          |          | PFD    | 36.44       | 40.30        | -0.72 | 0.47 | 375.71 | 401.04 | -1.44 | 0.15 |
|          |          | EFE    | 38.77       | 39.12        | -0.07 | 0.95 | 417.78 | 383.21 | -1.96 | 0.05 |
|          |          | EFD    | 31.87       | 42.64        | -2.00 | 0.045 | 344.75 | 414.16 | -3.93 | <0.001 |
|          |          | Engagement | 37.71     | 39.66        | -0.36 | 0.72 | 427.65 | 379.02 | -2.75 | 0.006 |
|          |          | Disengagement | 33.12    | 42.00        | -1.76 | 0.08 | 366.26 | 405.05 | -2.44 | 0.02 |
| WHOQOL-BREF | Overall  | 35.50       | 40.78        | -1.00 | 0.32 | 400.35 | 390.60 | -0.56 | 0.58 |
|          |          | Physical | 39.10       | 38.95        | -0.03 | 0.98 | 387.76 | 395.93 | -0.47 | 0.64 |
|          |          | Psychological | 30.23   | 43.47        | -2.48 | 0.013 | 345.60 | 433.81 | -3.89 | <0.001 |
|          |          | Social    | 35.35       | 40.86        | -1.04 | 0.30 | 373.07 | 402.16 | -1.66 | 0.098 |

PFE – Problem-focused engagement; EFE – Emotion-focused engagement; PFD – Problem-focused disengagement; EFD – Emotion-focused disengagement; EPI – Eysenck personality inventory

neurological), did not show any significant difference between the two groups. There were no differences observed in the subgroup analysis based on gender between the two groups, the details of which is depicted in Table 5. A Mann–Whitney U-test indicated that the overall QOL was higher but not significant for a single child group. [Table 5] Within-group analysis showed females perceived a better overall QOL compared to males in the siblings group with a P = 0.02. Females in both groups compared to their male counterparts perceived better social relationships with a P = 0.01 and < 0.001 for single child and siblings, respectively [Table 3].

On Spearman’s correlation analysis, number of siblings was negatively correlated with problem-focused disengagement (r = 0.08, P = 0.03) and disengagement (r = 0.08, P = 0.02). Extroversion had positive correlation with problem-focused engagement (r = 0.10; P = 0.005), emotion-focused engagement coping strategies (r = 0.14; P < 0.001) and overall QOL (r = 0.09; P = 0.008), physical (r = 0.10; P = 0.003) and psychological QOL (r = 0.14; P < 0.001).

Neuroticism had positive correlation with emotion-focused disengagement (r = 0.34; P < 0.001), disengagement coping strategies (r = 0.21; P < 0.001) and negative correlation with problem-focused disengagement (r = 0.08; P = 0.02), overall QOL (r = 0.23; P < 0.001) and across all domains (physical: r = 0.24; P < 0.001, psychological: r = 0.25; P < 0.001, social: r = 0.17, P < 0.001, and environmental: r = 0.28; P < 0.001, respectively).

**DISCUSSION**

The prevalence of being a single child is similar to the findings of the study from Puducherry,[1] however, there seems to be a difference in the sex with our findings showing female predominance in single child. The above finding can be interpreted in the light of more female participants in the study. This finding also contrasts with the general belief that the male child is more often desired by the families.[13] The average household size of single-child family is less than the national average of 4,
as in June 2012, which over the years had been showing a steady decrease.\[14\] This indicates that the nation is moving toward a demographic change from joint family setup to a nuclear family.

Though there was no significant difference in the extroversion and neuroticism scores between the two groups, single female child had higher scores on extroversion than their counterparts. The possible reason for this difference could be attributed to their upbringing by very conscientious parenting with the child being the sole beneficiary as well as getting “adultized” at an earlier age.\[17\] This might contrast the belief that parents of the single child might be overprotective, and their wards become less sociable.\[18\]

Coping is described as an individual’s attempts to use cognitive and behavioral strategies to manage and regulate pressures, demands, and emotions in response to stress.\[19\] Few well explored coping dimensions were problem-focused versus emotion-focused; active versus passive; cognitive versus behavioral and approach versus avoidant.\[20\] Of which problem-focused coping refers to cognitive and behavioral efforts used to change the problem, and includes such strategies as problem-solving, planning,
and effort ensuring successful completion of the given task. Emotion-focused coping involves strategies that help control emotional arousal and distress that are caused by the stressor without addressing the problem, and includes avoidance, detachment, and suppression.\[19\] There exists no significant difference in the coping strategies employed by single child and those with siblings. Single female child tend to use problem focus disengagement strategies more than their female counterparts in the siblings groups. No such differences were observed between males of both groups. However, females as a whole tend to employ better-coping strategies in our study, which is similar to the findings of a study done in the UK.\[21\]

QOL is a broad-ranging concept affected in a complex way by the person’s physical health, psychological state, personal beliefs, social relationships, and their relationship to salient features of their environment.\[22\] The study results suggest despite higher mean annual income in the single child group there appears to be no significant differences in the perceived QOL between the two groups. Poor physical health quality was perceived by males in the single child group compared to their sibling’s counterparts. The authors hypothesize that this possible difference could be attributed to either increased expectation in them, lifestyle diseases of abundance or secondary to parental apprehension with regards to health since childhood. Females compared to their male counterparts in both groups perceived better quality of social relationship can be attributed to a better engagement coping strategies employed by them in dealing with interpersonal relationship problems.

In our study, there was no significant difference in the variables between the two groups. This could partly be attributed due to the influence of peer relationships during late adolescence and undergraduate years as their socialization over the years could have diluted the difference in them.\[23\]

An attempt to study the correlation between the number of siblings, personality factors, coping strategies, and QOL domains showed with an increase in the number of siblings, there seems to be a significant decrease in disengagement coping strategies. Extroversion scores showed a positive association with engagement type of coping strategies and physical and psychological health QOL. Neuroticism seems to increase disengaging coping strategies and negatively correlated to all QOL domains. The findings are similar to a study conducted in Iranian students,\[24\] which reflects that it is necessary to look into neuroticism scores of students as a major predictor of mental health in them.

**Strengths and limitation**

The strengths of the study being the first of its kind to determine the difference between single child and one among siblings in India, the use of reliable and valid instruments. The limitations of our study being skewed population with female predominance hence results need to be interpreted with caution for generalizability and inherent to the design causality could not be explained.

### CONCLUSION

This study did not find any significant difference in personality dimensions, coping strategies and QOL between single child and those with siblings. However, better extroversion scores correlate with engagement coping strategies and good QOL on physical and psychological domains in both groups. In future, longitudinal studies can be planned to follow birth cohorts over the years to determine the trajectories of personality development and coping skills and the influence of parenting and peer relationships on them.

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**Conflicts of interest**

There are no conflicts of interest.

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