

# Explorative Factor Analysis (EFA) Extraction of Psychosocial Determinants Associated with Suicidal Ideation among Adults in Batticaloa District, Sri Lanka

Kartheepan, K<sup>1#</sup>, Arulanandem, K<sup>2</sup>

<sup>1</sup>Senior Lecturer in Community Medicine, Department of Primary Health Care, Faculty of Health-Care Sciences, Eastern University, Sri Lanka. (kartheepank@esn.ac.lk)

<sup>2</sup>Senior Lecturer in Family Medicine, Department of Primary Health Care, Faculty of Health-Care Sciences, Eastern University, Sri Lanka.

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**Abstract:** Background: Suicidal ideation is a significant public health issue, since; it leads to preventable death eventually. Moreover, it is a complex problem, therefore it has to be investigate in multi-level. Objective: Present study was directed to identify the psychosocial determinants of suicidal ideation among adults in Batticaloa District of Sri Lanka (BDSL). Methodology: A cross sectional study was carried out with the participation of 237 (majority-age category 50-<60 years) adult patients (55.5% female) admitted to medical wards of Base Hospital, Kaluwanchikudy (BHK) during the period of 1<sup>st</sup> January to 31<sup>st</sup> May, 2019. Two stage cluster sampling method was applied. Possible psychosocial factors for suicidal ideation were included in the quesstionnare. Statistical software (SPSS 25.0) was used to analyze the data and p-value < 0.05 was considered significant for all analyses. Descriptive statistical analysis and Explorative Factor Analysis (EFA) was performed. Ethical approval was obtained from Ethical Review Committee, Faculty of Health - Care Sciences, Eastern University, Sri Lanka. Results: Sampling adequacy for EFA was full filed (KMO=0.785). Independent variables were correlated among them (Bartlett's test of sphericity was significant (chi-square=5196.99, p=0.00). In EFA, 28 independent variables were grouped in to SIX factors that are associated with suicidal ideation. These six factors were altogether contributed to the 66.9% of the total variance partitioned into 24.0% by factor-01(F1), 15.9% by factor-02(F2), 7.9% by factor-03(F3), 7.0% by factor-04(F4), 6.1% by factor-05(F5) and 5.7% by factor-06(F6). The SIX factors extracted were named as; F1-personal life and mental health status, F2-health status and married life, F3-sexual life of married people, F4-occupational status, F5-attempted suicide and F6-ethnicity. Conclusions: Twenty eight independent variables were identified as associated psychosocial factors with suicidal ideation among adult community grouped in to SIX factors as; personal life and mental health status, health status and married life, sexual life of married people, occupational status, attempted suicide and ethnicity.

**Keywords:** Adults, Batticaloa, Explorative Factor Analysis, Psychosocial determinants, Suicidal ideation.

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## 1. INTRODUCTION

Wishes, thoughts, and the inclination towards committing suicide are defined as suicidal ideation. In young people, self-destructive ideation has been detailed as an imperative risk factor for suicide. It is additionally related to a consequent risk of attempting suicide [24]. Suicidal ideation could be a solid predictor of suicide in both the common population as well as among adolescents. Furthermore, mental dissection ponders appear that most suicides happen on the first attempt, highlighting the significance of recognizing antecedents to suicidal ideation to advise suicide prevention efforts [16]. Suicidal attempt (the individual survives) and suicidal ideation (thinking seriously about suicide) are other measurements of the suicidal phenomenon.

Sociological (external) variables and psychological (internal) factors have been considered in enhancing suicidal threat [19]. Self-destructive thoughts are not exceptional among young individuals. It is evaluated that between 22% and 38% of youths have considered suicide at a few points in their lives and between 12% and 26% announcing having had such contemplations within the past year [22]. Several risk factors for suicidal behavior have been identified, for example low socio-economic status, experienced child abuse, and mental disorders [26].

Besides, the findings of research also shows that age may be a predictor of self-destructive ideation and is negatively connected with suicidal ideation. This suggests that the more youthful they are, the more likely they will have suicidal ideation [20]. Ideation can be recognized from studies with forms/ questionnaires in which secrecy is maintained and which speak to the substances that each gathers of young people experiences in their community with yearnings and tensions [25].

Numerous studies show that the risk components for suicide can be due to person (heredity, bio-physiological viewpoints, mental health, manhandle history, history of suicide endeavors, and sexual orientation), family (family history, a few sort of family psychopathology, and challenges in family connections), environmental and demographic variables (components related with a social and financial impediment, issues at school, etc.), and life stressors (variables that sporadically happen and can upgrade any of the recorded hazard components) which a few social components ought to moreover be considered in endeavoring to clarify this phenomenon [25]. Subsequently, early detection of suicide ideations permits successful anticipation [4].

There's a wide extend of behaviors of self-destructive ideation that changes from brief, fleeting arranging to point by point plans, role-playing, self-harm, and unsuccessful suicide endeavors [15]. Adapting fashion, life occasions, and social support were most strongly related to self-destructive ideation in prisoners. In specific, a detached adapting fashion, sentiments of loneliness, and the misfortune of a noteworthy other contributed most to the nearness of suicidal ideation, though a close partner relationship constituted a defensive factor of suicidal considerations [6]. Various risk variables have been related to suicidal ideation among adults worldwide. Notwithstanding of populations, these risk components incorporate, but are not restricted to, depression, loneliness, constrained sexual intercourse, utilizing unlawful drugs, presence of an awful relationship between parents, being exposed to intimate partner violence, encountering a childhood sexual abuse, being unemployed, being middle-aged, low household income, lack of social support, being single, separated, or widowed, being childless, higher perceived stress, and low level of educational achievement [23].

The prevalence of mental sicknesses among suicides in Asian nations happened less regularly than in Western nations, demonstrating that suicide in Asian countries has been caught on not primarily as the arrangement of such mental ailments but more as a reaction to psychosocial stressors. Still, discoveries of western countries may not be generalizable to Asian nations such as Sri Lanka, India etc. since of checked contrasts in financial conditions and social conventions. Universally, lifetime prevalence rates are around 9.2% for suicidal ideation and 2.7% for suicide attempts [2]. In numerous high-income nations, suicide rates in jail are evaluated to be three to eight times higher than within the common community, reflecting rates over 100 per 100,000 prisoners [6]. A particular study reveals that a solid and positive reason for living is valuable in avoiding suicide. Additionally, the findings are pertinent for specialist and counselors in evaluating suicidal dangers [13].

Concerning epidemiology, the prevalence of suicidal considerations and behaviors among youth changes over nations and socio-demographic populations. Despite this, studies are seldom conducted cross-nationally and don't consistently account for high-risk populations. Concerning etiology, the majority of risk variables have been recognized inside the domain of environmental and psychological variables (notably negative affect-related processes), and most regularly utilizing self-report measures [5]. Suicidal behavior proceeds to be a vital subject of investigation and critical public health concern universally. The World Health Organization prescribes a public health approach to avoid suicidal behavior that centers on recognizing the patterns of suicide and suicidal behavior of a gather or population [18].

Suicidal ideation was emphatically related to depression, but too with abnormal fatigue and liquor and tobacco utilization [21]. More than 90% of patients who commit suicide have a diagnosable psychiatric disorder, ordinarily a major depressive disorder [3]. The best-fitting structural equation model demonstrated a significant commitment from hereditary components (57%; CI 47–66) and non-shared environmental variables (43%; CI 34–53) in both men and ladies [21].

The results show an absence of high-quality epidemiological studies (eg, prospective cohort studies, which controlled for working environment characteristics and standard psychiatric morbidity). Whereas the accessible literature (overwhelmingly cross-sectional) suggests that there's a positive association between workplace bullying and suicidal

ideation, the low quality of studies avoids ruling out alternative clarifications [17]. Advance longitudinal, population-based investigation, altering for potential covariates (within and outside the workplace), is required to decide the level of risk that work environment bullying autonomously contributes to suicidal ideation and behavior [17].

The World Health Organization (WHO) gauges that 75% of suicides happen in low and middle-income countries (LMICs), however, the investigation from these regions is rare (WHO, 2014). Sri Lanka, the setting for this study, positions fourth out of 172 nations (WHO, 2014) with a suicide rate of 28.8/100 000/year compared with a worldwide rate of 11.4/100 000/year in 2012 [21]. The conflict has presently decreased and Sri Lanka is at peace, but suicide rates still win. Since the 1970s Sri Lanka has persevered greatly high suicide rates, peaking within 1995 where it had one of the highest suicide rates in the world, 47/100,000. [11]. The crude suicide rate of the Batticaloa area was in 2011 was 23.7 per 100, 000. [8]. A recent report from the World Health Organization positions Sri Lanka as the 4th most suicide inclined nation in the world [10].

In recent decades, Sri Lanka has recorded one of the most elevated rates of suicide in the world. Its rate of female suicide is a moment as it was to China [14]. Suicides and acts of self-harm are concentrated in rural regions and among financially disadvantaged groups. Numerous happen within the setting of family disputes and other clashes with intimates [14]. They are to a great extent unpremeditated and driven by feelings of anger, humiliation, disappointment, and want to strike back against wrongful treatment [14].

Suicidal problem is a complex matter, therefore it has to be investigate in several levels: firstly with the individuals where self-harm occurred and leads to suicidal incidence; secondly at family level-where has to look for arises of initial thoughts of suicidal behavior; thirdly at a community level-where we look at perceptions of empathy towards others common and personal problems in terms of for who and at what times it is accepted to help and when it is considered a serious suffering of hopelessness, as well as how it is understood to be connected to self-harm and eventually leadings to recurrent suicidal activities.

There are lack of simultaneous multidimensional approach research about the psychosocial risk factors of suicidal ideation among adults in Sri Lanka particularly no research project conducted in Batticaloa district of Sri Lanka. Because of the difficulty in studying suicide as an outcome, researchers instead often study suicidal thoughts and/or behaviors as proxies for suicide [9].

In the absence of specific scientific studies concern about identifying the predisposing, risk and protective factors associated with suicidal behaviors and ideation in Batticaloa district, this present study was focused towards recognize those factors of suicidal behaviors and ideation which subsequently leads to the suicidal attempts and completed suicide. Furthermore, with the multidimensional approach, findings of this current study is used to construct the strategic suicidal preventive model as the protective mechanism of suicide in the context of public health significance.

## **2. METHODOLOGY**

### ***A. Study Design***

A descriptive cross-sectional study was conducted.

### ***B. Study setting***

The male and female medical wards of Base Hospital, Kaluwanchikudy, Batticaloa, Sri Lanka was the study setting.

### ***C. Study period***

The study period was five months (01.01.2019 to 31.05.2019)

### ***D. Sampling method***

Two stage cluster sampling was applied. The first stage involved with selection of the hospitals (Primary cluster) while the second stage dealt with the selection of wards (Secondary cluster). Therefore in the first stage Kaluwanchikudy Base Hospital was selected as a primary cluster among total three (3) Base Hospital in Batticaloa district. In the second stage two medical wards (Male and Female) were selected as secondary clusters among the all eligible wards in Kaluwanchikudy Base Hospital. Finally complete enumeration was performed in selected wards.

**E. Sample size**

Sample size was calculated as follows:  $n = Z^2 \frac{pq}{(M.E)^2}$  and n=size of final sampling unit, Z=confidence level of study, p=prevalence of study of interest, q=1-prevalence of study of interest,  $\alpha$ =significance level of study and M.E=margin of error.  $Z=1.96$ , p=prevalence of suicidal ideation in Sri Lanka (literature) =0.07, q=1-prevalence=1-0.07=0.93,  $n = (1.96)^2 * 0.07 * 0.93 / (0.035)^2 = 3.8416 * 0.07 * 0.93 / 0.001225 = 0.25008816 / 0.001225 = 204.1536$ . Approximated sample size was 205.

Final sample size after correction to the non-response rate was  $= 205 + 10/100 * 205 = 205 + 20.5 = 225.5 \approx 226$ . The margin of error is considered as half of the prevalence since prevalence of suicidal ideation is less than 10% in the literature. As usual non response rate was considered as 10%. Therefore the final sample size was 226.

**F. Study unit**

Adult patient who admitted in the medical wards considered as study unit of this investigation.

**G. Case definition/Operational definition**

All patients whom age higher the 18 years old and who admitted for various illness irrespective of their types of illness, gender, ethnicity and religion. Suicidal ideation is defined as a desire to die or a desire to engage in lethal behaviors [23]. Suicide thinkers are individuals who currently have plans and wishes to commit suicide but have not made any recent overt suicide attempt [1]. Suicidal behavior is an umbrella term as it includes suicidal ideation, suicide planning, and suicide attempt that may lead to suicide [22].

**H. Data collection tool**

Structured Interviewer Administered Questionnaire (SIAQ) with the possible psychosocial factors for suicidal ideation was used as data collection tool to capture the psychosocial determinants associated with suicidal ideation among adults in Batticaloa District, Sri Lanka.

**I. Statistical Methods and Data Analysis Packages**

Descriptive Statistics and Explorative Factor Analysis (EFA) were used as the statistical analysis method of collected data. Moreover, Microsoft-Excel and Statistical Software for Social Sciences (SPSS 25.0) were used as the data analytical soft wares.

**J. Ethical clearance**

Ethical approval obtained from Ethical Review Committee, Faculty of Health-Care Sciences, Eastern University, Sri Lanka.

**3. RESULTS**

There were totally two hundred and thirty seven (237) adult (equal or more than 18 years old) participant recruited for this study. The baseline information were tabulated as follows.

**Table 1: Baseline (Static) Factors Concerning Suicide Risk**

| Variable (n=237) | Frequency | Percentage |
|------------------|-----------|------------|
| <b>Gender</b>    |           |            |
| Male             | 115       | 48.5       |
| Female           | 122       | 51.5       |
| <b>Age</b>       |           |            |
| 18 - < 30 years  | 31        | 13.1       |
| 30 - < 40 years  | 20        | 8.4        |
| 40 - < 50 years  | 37        | 15.6       |
| 50 - < 60 years  | 59        | 24.9       |
| 60 - < 70 years  | 46        | 19.4       |
| 70 - < 80 years  | 36        | 15.2       |
| >= 80 years      | 8         | 3.4        |

|                                    |     |      |
|------------------------------------|-----|------|
| <b>Religion</b>                    |     |      |
| Buddhist                           | Nil | Nil  |
| Hindu                              | 229 | 96.6 |
| Islam                              | Nil | Nil  |
| Christian                          | 8   | 3.4  |
| <b>Ethnicity</b>                   |     |      |
| Sinhala                            | 1   | 0.40 |
| Tamil                              | 236 | 99.6 |
| Muslim                             | Nil | Nil  |
| Others                             | Nil | Nil  |
| <b>Marital status</b>              |     |      |
| Unmarried                          | 29  | 12.2 |
| Married                            | 178 | 75.1 |
| Divorced                           | Nil | Nil  |
| Widowed                            | Nil | Nil  |
| Separated                          | 28  | 11.8 |
| Living together                    | 2   | 0.80 |
| <b>Educational level</b>           |     |      |
| Less than Grade 5                  | 30  | 12.7 |
| Grade 5 to GCE (O/L)               | 97  | 40.9 |
| GCE (A/L)                          | 95  | 40.1 |
| Diploma holders                    | 12  | 5.1  |
| Graduates                          | 3   | 1.3  |
| Postgraduates                      | Nil | Nil  |
| <b>Monthly income</b>              |     |      |
| Less than Rs. 10,000               | 6   | 2.50 |
| Rs.10, 000 - < Rs.20, 000          | 24  | 10.1 |
| Rs.20, 000 - < Rs.30, 000          | 44  | 18.6 |
| Rs.30, 000 - < Rs.40, 000          | 30  | 12.7 |
| More than Rs.50, 000               | 1   | 0.40 |
| Not applicable                     | 132 | 55.7 |
| <b>Types of occupation</b>         |     |      |
| Unemployment                       | 132 | 55.7 |
| Self-employment                    | 64  | 27.0 |
| Government worker                  | 2   | .8   |
| Non-government organization worker | 3   | 1.3  |
| Not specify                        | 36  | 15.2 |

Among those majority of them (51.5%) were female patients. About one fourth (24.9%) of the patients of this investigation were belongs to the age group 50-<60 years old nevertheless minority of respondents were coming under the age category  $\geq 80$  years old.

Most of patients of this study were following Hinduism as religious perspective. Almost all of respondents (99.6%) were coming under Tamil ethnic group whereas a single participant belongs to Sinhala community. 75.1% of patients of this study were married yet very few people (0.8%) were separated from their spouse.

Educational status of the more patients (40.9%) belongs to the classification of grade-5 to GCE (O/L) however very few participants (1.3%) are graduates. More than half of patients (55.7%) are economically dependent while around one fifth of respondents are coming under the monthly income classification of Rs20, 000 - < Rs30, 000. Occupational status of majority of the patients (55.7%) were unemployed however 27% of the participants were self-employed while very few of them (0.8%) were government workers.

**Table 2: Extracted variable number and name (question number and name)**

| Variable number<br>(Question no) | Variable name  |
|----------------------------------|--|
| Q11                              | Have you thought of suicide within the last two months?  |
| Q12                              | Have you ever suffered by suicidal thoughts in your life?  |
| Q13                              | How do you feel about you?   |
| Q14                              | How do you feel about your own life  |
| Q16                              | Have you ever attempted suicide? (if yes go to question no 17 otherwise skip question no 17)             |
| Q17                              | How do you feel about surviving this attempt?  |
| Q18                              | Has anyone in your family ever attempted suicide? (If yes go to question no 19 otherwise skip it)        |
| Q20                              | When they attempted suicide?   |
| Q21                              | Gender   |
| Q22                              | Age  |
| Q23                              | Religion   |
| Q24                              | Ethnicity  |
| Q25                              | Marital status   |
| Q26                              | Educational level  |
| Q27                              | Monthly income   |
| Q28                              | Types of occupation  |
| Q29                              | Do you suffering by any of following history, if YES specify it  |
| Q30                              | Do you suffering by any of following psychiatric illness/disorder, if YES specify it                     |
| Q31                              | Are you suffering by any one of following recent stressful events, if YES specify it                     |
| Q32                              | Are you suffering any one of following medical conditions, if YES specify it                             |
| Q33                              | Are you suffer by any one of following lack of social support, if YES specify it                         |
| Q34                              | Access to means  |
| Q35                              | Religious beliefs or affiliations  |
| Q36                              | How is important to your married life (only applicable for married participants)                         |
| Q37                              | How do you satisfy your sexual life (only applicable for married persons)                                |
| Q38                              | How do you strength your life with your children (only applicable for married and child bearing persons) |
| Q39                              | How often you involving with your hobbies/entertainment  |
| Q15                              | Would any of your problems be solved if you committed suicide?   |

**Table 3: Determination of sampling adequacy of data for explorative factorial analysis**

| KMO and Bartlett's Test                          |                    |          |
|--|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | .785     |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square | 5196.988 |
|  | df                 | 378      |
|  | Sig.               | .000     |

Explorative factor analysis is the statistical technique mainly meant for data reduction leads meaningfully to further statistical analysis of the collected data to derive the adequate information. Therefore, explorative factor analysis performed in order to achieve the variables reduction. The sampling adequacy of factor analysis was full filled with the KMO values (0.785) because KMO value closer to one is the indication of sampling adequacy.

Since Bartlett's test of sphericity is significant (chi-square=5196.988, p=0.000), the independent variables are correlated among them which is necessary requirement for factor analysis. Moreover, all related variables were get together to form the appropriate factors. However factors are uncorrelated.

**Table 4: Initial and extraction values of explorative factor analysis**

|     | Communalities |            |
|-----|---------------|------------|
|     | Initial       | Extraction |
| Q11 | 1.000         | .913       |
| Q12 | 1.000         | .820       |
| Q13 | 1.000         | .835       |
| Q14 | 1.000         | .688       |
| Q16 | 1.000         | .871       |
| Q17 | 1.000         | .859       |



|     |       |      |
|-----|-------|------|
| Q18 | 1.000 | .947 |
| Q20 | 1.000 | .958 |
| Q21 | 1.000 | .506 |
| Q22 | 1.000 | .755 |
| Q23 | 1.000 | .052 |
| Q24 | 1.000 | .035 |
| Q25 | 1.000 | .435 |
| Q26 | 1.000 | .515 |
| Q27 | 1.000 | .598 |
| Q28 | 1.000 | .729 |
| Q29 | 1.000 | .645 |
| Q30 | 1.000 | .650 |
| Q31 | 1.000 | .710 |
| Q32 | 1.000 | .566 |
| Q33 | 1.000 | .722 |
| Q34 | 1.000 | .273 |
| Q35 | 1.000 | .438 |
| Q36 | 1.000 | .931 |
| Q37 | 1.000 | .788 |
| Q38 | 1.000 | .894 |
| Q39 | 1.000 | .738 |
| Q15 | 1.000 | .874 |

Extraction Method: Principal Component Analysis.

In order to provide the equal weight at initial and extraction, the communality has to be considered. Furthermore all explanatory variables were considered for factor analysis since their extraction values are more than 0.5000.

**Table 5: Total variance in sample explained via explorative factorial analysis**

| Component | Total Variance Explained |               |              |                                     |               |              |                                   |               |              |
|-----------|--------------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
|           | Initial Eigenvalues      |               |              | Extraction Sums of Squared Loadings |               |              | Rotation Sums of Squared Loadings |               |              |
|           | Total                    | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % | Total                             | % of Variance | Cumulative % |
| 1         | 6.743                    | 24.083        | 24.083       | 6.743                               | 24.083        | 24.083       | 5.030                             | 17.964        | 17.964       |
| 2         | 4.458                    | 15.920        | 40.003       | 4.458                               | 15.920        | 40.003       | 4.658                             | 16.637        | 34.601       |
| 3         | 2.234                    | 7.980         | 47.982       | 2.234                               | 7.980         | 47.982       | 2.533                             | 9.046         | 43.648       |
| 4         | 1.969                    | 7.032         | 55.014       | 1.969                               | 7.032         | 55.014       | 2.303                             | 8.226         | 51.874       |
| 5         | 1.727                    | 6.167         | 61.181       | 1.727                               | 6.167         | 61.181       | 2.164                             | 7.730         | 59.604       |
| 6         | 1.614                    | 5.766         | 66.947       | 1.614                               | 5.766         | 66.947       | 2.056                             | 7.343         | 66.947       |
| 7         | 1.130                    | 4.034         | 70.981       |                                     |               |              |                                   |               |              |
| 8         | 1.054                    | 3.765         | 74.746       |                                     |               |              |                                   |               |              |
| 9         | 1.009                    | 3.603         | 78.349       |                                     |               |              |                                   |               |              |
| 10        | .851                     | 3.040         | 81.389       |                                     |               |              |                                   |               |              |
| 11        | .778                     | 2.779         | 84.168       |                                     |               |              |                                   |               |              |
| 12        | .647                     | 2.309         | 86.477       |                                     |               |              |                                   |               |              |
| 13        | .597                     | 2.133         | 88.610       |                                     |               |              |                                   |               |              |
| 14        | .550                     | 1.963         | 90.573       |                                     |               |              |                                   |               |              |
| 15        | .382                     | 1.364         | 91.937       |                                     |               |              |                                   |               |              |
| 16        | .352                     | 1.259         | 93.196       |                                     |               |              |                                   |               |              |
| 17        | .336                     | 1.200         | 94.396       |                                     |               |              |                                   |               |              |
| 18        | .286                     | 1.022         | 95.419       |                                     |               |              |                                   |               |              |
| 19        | .276                     | .984          | 96.403       |                                     |               |              |                                   |               |              |
| 20        | .219                     | .781          | 97.184       |                                     |               |              |                                   |               |              |
| 21        | .211                     | .754          | 97.938       |                                     |               |              |                                   |               |              |
| 22        | .149                     | .531          | 98.469       |                                     |               |              |                                   |               |              |
| 23        | .121                     | .433          | 98.902       |                                     |               |              |                                   |               |              |
| 24        | .111                     | .397          | 99.299       |                                     |               |              |                                   |               |              |
| 25        | .064                     | .228          | 99.526       |                                     |               |              |                                   |               |              |
| 26        | .056                     | .199          | 99.725       |                                     |               |              |                                   |               |              |
| 27        | .053                     | .191          | 99.916       |                                     |               |              |                                   |               |              |
| 28        | .023                     | .084          | 100.000      |                                     |               |              |                                   |               |              |

Extraction Method: Principal Component Analysis.

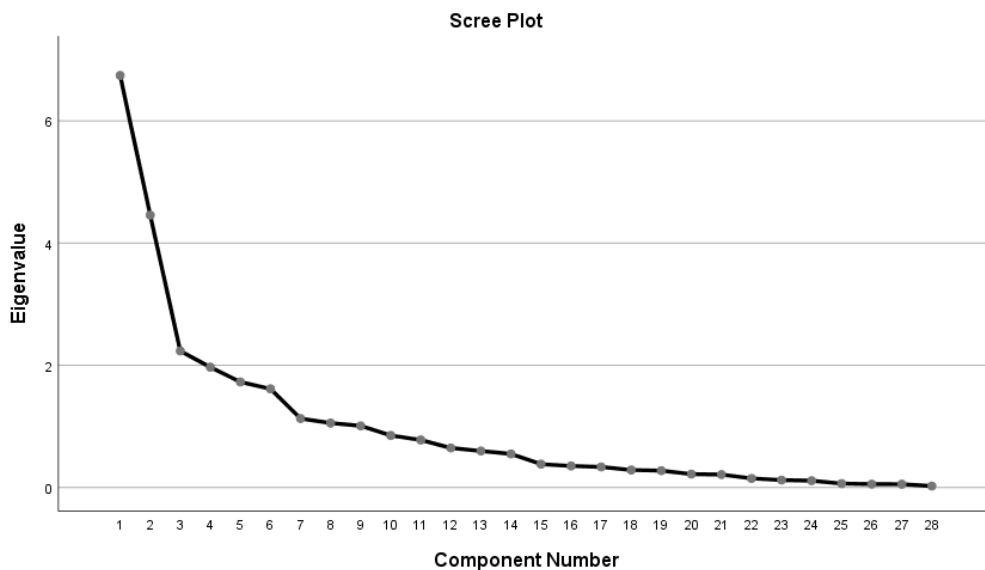
These six factors are altogether contributed to the 66.947% of the total variance partitioned into 24.083% by factor-01, 15.920% by factor-02, 7.980% by factor-03, 7.032% by factor-04, 6.167% by factor-05 and 5.766% by factor-06

**Table 6: Component matrix indicating the way of factor extraction**

|     | Component Matrix <sup>a</sup> |       |       |       |       |       |
|-----|-------------------------------|-------|-------|-------|-------|-------|
|     | 1                             | 2     | 3     | 4     | 5     | 6     |
| Q39 | -.760                         | -.355 |       | .168  |       |       |
| Q11 | .758                          | -.499 |       | -.152 |       | -.239 |
| Q15 | -.742                         | .422  |       | .218  | .120  | .290  |
| Q13 | -.728                         | .423  |       | .175  | .182  | .250  |
| Q12 | .727                          | -.498 |       | -.102 |       | -.167 |
| Q33 | .715                          | .292  |       |       | .186  | .300  |
| Q31 | .684                          | .344  | .116  |       | .159  | .281  |
| Q30 | .683                          | .235  |       |       | .191  | .283  |
| Q14 | .632                          | -.429 |       | -.109 |       | -.297 |
| Q29 | .614                          | .263  | .224  |       | .150  | .354  |
| Q35 | -.524                         | .227  |       | .291  | -.132 |       |
| Q26 | .476                          | .428  | -.297 |       |       |       |
| Q34 | .455                          | .178  |       | .151  |       |       |
| Q25 | -.442                         | -.356 | .272  | -.140 | .111  |       |
| Q23 | .140                          |       |       | .132  |       |       |
| Q36 | .153                          | .703  | .366  | .280  |       | -.447 |
| Q38 |                               | .665  | .433  | .225  |       | -.452 |
| Q22 | -.512                         | -.623 | .228  |       | .221  |       |
| Q32 | .446                          | .565  | -.129 | -.120 |       | .126  |
| Q37 | -.118                         | .436  | .640  |       |       | -.406 |
| Q28 | .290                          | -.103 | -.476 | .603  | -.202 |       |
| Q21 |                               |       | .356  | -.562 | -.145 | .169  |
| Q27 | -.211                         | .151  | .460  | -.514 | .120  | .202  |
| Q20 | .185                          | -.299 | .505  | .340  | -.606 | .311  |
| Q18 | .192                          | -.312 | .486  | .343  | -.590 | .332  |
| Q16 | .268                          | -.509 | .223  | .390  | .580  |       |
| Q17 | .224                          | -.494 | .251  | .423  | .563  |       |
| Q24 |                               |       |       |       |       | .121  |

Extraction Method: Principal Component Analysis.

a. 6 components extracted.



**Figure 1: Scree plot indicating the way of factor extraction**



There were SIX factors identified based on the total variance, factor loadings of component matrix and scree plot. Finally the SIX factors which were identified can be named as follows; F1-personal life and mental health status, F2-health status and married life, F3-sexual life of married people, F4-occupational status, F5-attempted suicide and F6-ethnicity based on the factor loadings from component matrix and point at turning as parallel line to the x-axis of scree plot.

#### 4. DISCUSSION

Suicidal behaviour is a process and suicidal ideation forms part of that process. Suicidal Ideation means thinking about and engaging in it, writing or talking about it or planning it. About 60% of transitions from suicidal ideation to attempt occurred within the first year after ideation onset [23].

The prevalence of current suicidal ideation of the recruited participant is 20700/100,000. Moreover the prevalence of suicidal ideation within the last two months also numerically same as the current prevalence for suicidal ideation. These two values are remarkably highest values compare to some study in the literature [7] and numerically equally fit in to another study [22]. Globally, lifetime prevalence rates are approximately 9.2% for suicidal ideation and 2.7% for suicide attempt [2].

Crude suicide rate of Batticaloa district was in 2011 was 23.7 per 100, 000. [8]. Therefore, the prevalence of lifetime suicidal ideation is 24,900/100,000 is mimic the same numerical value, however ideation not necessarily end up with completed suicide. Furthermore, another study indicate that the lifetime prevalence of any suicidal ideation was 13.0% (11.7–14.3%) for men; 21.8% (20.3–23.2%) for women, with no significant difference between twins and non-twins [21], though this the low value compared with this current study.

Occupational status of majority of the patients (55.7%) were unemployed however 27% of the participants were self-employed while very few of them (0.8%) were government workers. A strong predictor of suicide is socioeconomic disadvantage. Overall suicide rates appear to be associated with indicators of economic distress. Suicide rates are highest in low-income areas and the greater changes in economic cycle have been associated with greater increase in the suicide rate [19]. With the complex transformations of the family environment, suicide prevention should be prioritized [12].

Finally the SIX factors which were identified can be named as follows; personal life and mental health status, health status and married life, sexual life of married people, occupational status, attempted suicide and ethnicity based on the factor loadings from component matrix. These factors are compatible with some past studies [19], [26] and demonstrate some peculiar factors which were not in the literature such as chronic trauma due to the past ethnic conflict in Sri Lanka. Risk factors of suicide include previous suicide attempt(s), history of depression or other mental illness, alcohol or drug abuse, family history of suicide or violence, physical illness, and feeling alone [1].

#### 5. CONCLUSION

Prevalence of current suicidal ideation is high in Batticaloa district of Sri Lanka compare to literature. Males are more prone to suicidal ideation compare to females.

Most of the patients (80.6%) were suffered by at least one of any of issues of past history. Exposure to traumatic event (especially lost of loved ones during ethnic conflict) and smoking habit are more vulnerable precursor for past history. More than half of patients (55.7%) are economically dependent i.e unemployed. Economical dependency and unemployment are considered as the predominant social risk factors for the suicidal ideation in the study population.

Twenty eight independent variables were identified as associated psychosocial factors with suicidal ideation among adult community grouped in to SIX factors as; personal life and mental health status, health status and married life, sexual life of married people, occupational status, attempted suicide and ethnicity.

Therefore, strategic suicidal prevention in Batticaloa district of Sri Lanka should focus multilevel of these identified risk factors in order to achieve sustainable and effective suicidal preventive measures.

#### REFERENCES

- [1] Ahmet Emre Aladag., Serra Muderrisoglu., Naz Berfu Akbas4., Oguzhan Zahmacioglu and Haluk O Bingol1 (2018). Detecting Suicidal Ideation on Forums: Proof-of-Concept Study. *Journal of Medical Internet Research* (2018); 20(6):e215.
- [2] Amelia M. Arria., Kevin E. O'Grady., Kimberly M., Caldeira, M.S.1, Kathryn B.Vincent, M.A.1., Holly C. Wilcox and Eric D. Wish. (2010). Suicide ideation among college students: A multivariate analysis. *Arch Suicide Res.* 2009; 13(3): 230–246. doi:10.1080/13811110903044351.

- [3] Aslihan Okan Ibiloglu., Abdullah Atli., Suleyman Demir., Mehmet Gunes., Mehmet Cemal Kaya., Mahmut., Bulut and Aytekin (2016). The investigation of factors related to suicide attempts in Southeastern Turkey. *Neuropsychiatric Disease and Treatment*, 2016:12 407–416.
- [4] Bouchra Oneib1., Maria Sabir., Yassine Otheman., Naima Abda and Abderrazzak Ouanass. (2016). Suicidal ideations, plans and attempts in primary care: cross-sectional study of consultants at primary health care system in Morocco. *Pan African Medical Journal*. (2016); 24:174 doi:10.11604/pamj.2016.24.274.9060.
- [5] Christine B. Cha., Peter J. Franz., Eleonora M. Guzman., Catherine R. Glenn., Evan M. Kleiman and Matthew K. Nock (2018). Annual Research Review: Suicide among youth-epidemiology, (potential) etiology, and treatment. *Journal of Child Psychology and Psychiatry*, 59:4 (2018), pp 460–482. (LR42).
- [6] Ciska Wittouck., Louis Favril., Gwendolyn Portzky., Freya Vander Laenen, Frederic Declercq and Kurt Audenaert, (2016). "Correlates of suicidal ideation in incarcerated offenders: a pilot study in three Belgian prisons", *Journal of Criminal Psychology*, Vol. 6 Issue: 4, pp.187-201.
- [7] Davinder Singh Johal and Meenakshi Sharma. (2016). Suicide Ideation and Life Satisfaction among Adolescents: A Correlational Study. *IOSR Journal of Humanities and Social Science (IOSR-JHSS) Volume 21, Issue 1, Ver. II (Jan. 2016) PP 23-28*.
- [8] De Silva, S.A., et. al (2016). Suicide first aid guidelines for Sri Lanka: a Delphi consensus study. *International Journal of Mental Health Systems*. 10:53.
- [9] E. David Klonsky., Alexis M. May and Boaz Y. Saffer. (2010). Suicide, Suicide Attempts, and Suicidal Ideation. *Annual Review Clinical Psychology*. (2016), 12:307–30.
- [10] [http://apps.who.int/iris/bitstream/handle/10665/131056/9789241564779\\_eng.pdf;jsessionid=09F640A2D9EDFAE87A80899A03538F24?sequence=1/Preventing Suicide: A Global Imperative, WHO: 2014](http://apps.who.int/iris/bitstream/handle/10665/131056/9789241564779_eng.pdf;jsessionid=09F640A2D9EDFAE87A80899A03538F24?sequence=1/Preventing%20Suicide%3A%20A%20Global%20Imperative%2C%20WHO%3A%202014).
- [11] <https://www.colombotelegraph.com/index.php/tackling-the-burden-of-suicide-in-sri-lanka/>.
- [12] Hui Zhai., Bing Bai., Lu Chen., Dong Han., Lin Wang., Zhengxue Qiao., Xiaohui Qiu., Xiuxian Yang and Yanjie Yang. (2015). Correlation between Family Environment and Suicidal Ideation in University Students in China. *International Journal Environmental Research and Public Health* (2015), 12, 1412-1424.
- [13] Ishita Chatterjee and Jayanti Basu (2010). Perceived Causes of Suicide, Reasons for Living and Suicidal Ideation among Students. *Journal of the Indian Academy of Applied Psychology*, July 2010, Vol.36, No.2, 311-316.
- [14] Jeanne Marecek, (2006). Young Women's Suicide in Sri Lanka: Cultural, Ecological, and Psychological Factors. *Asian Journal of Counselling*, 2006, Vol. 13 No. 1, 63–92.
- [15] Khalid, Rabia., (2012). "Suicide Ideation and Its Associated Risk Factors among Adolescent Students in the Eastern Mediterranean Region." Thesis, Georgia State University, 2012.
- [16] Kwaku Oppong Asantea,b., Nuworza Kugbeyc., Joseph Osafoa., Emmanuel Nii-Boye Quarshiea,d and Jacob Owusu Sarfoe.(2017). The prevalence and correlates of suicidal behaviours (ideation, plan and attempt) among adolescents in senior high schools in Ghana. *SSM - Population Health* (2017); 427–434.
- [17] Leach LS., Poyser C and Butterworth P. (2017). Workplace bullying and the association with suicidal ideation/thoughts and behaviour: a systematic review. *Occupational and Environmental Medicine*, 2017; 74:72-79.
- [18] Merike Sisask and Kairi Kolves (2018). Towards a Greater Understanding of Suicidal Behavior and Its Prevention. *International Journal of Environmental Research and Public Health*, 2018, 15, 1629; doi: 10.3390/ijerph15081629.
- [19] Meyer, Lisa M. (2005) "Risk Factors of Suicidal Phenomenon: Prevention and Intervention," *Journal of Undergraduate Research at Minnesota State University, Mankato*. (2005), Vol. 5, Article 16.
- [20] Norhayati Ibrahim., Noh Amit., Normah Che Din and Hui Chien Ong. (2017). Gender differences and psychological factors associated with suicidal ideation among youth in Malaysia. *Psychology Research and Behavior Management* (2017):10 129–135.

- [21] R. Dutta1., H. A. Ball1., S. H. Siribaddana., A. Sumathipala., S. Samaraweera., P. McGuffin and M. Hotopf (2017). Genetic and other risk factors for suicidal ideation and the relationship with depression. *Psychological Medicine*, (2017), 47, 2438–2449. Cambridge University Press 2017 doi: 10.1017/S0033291717000940.
- [22] R. N Singh., Neha Pathak. (2017). Effects of Self- esteem on Suicidal Ideation among Adolescents. *The International Journal of Indian Psychology*, (2017), Volume 4, Issue 4, 2349-3429.
- [23] Raya Albataineh (2017). Psychosocial determinants of suicidal ideation among Thai women. Dissertation submitted to Kent State University College of Nursing in partial fulfillment of the requirements for the degree of Doctor of Philosophy.
- [24] Reza Ziaei1., Eija Viitasara., Joaquim Soares., Homayoun Sadeghi-Bazarghani., Saeed Dastgiri., Ali Hossein Zeinalzadeh., Farhad Bahadori and Reza Mohammadi. (2017). Suicidal ideation and its correlates among high school students in Iran: a cross-sectional study. *BMC Psychiatry*, (2017) 17:147.
- [25] Roberto Jeronimo dos Santos Silva., Fabio Alexandre Lima dos Santos., Nara Michelle Moura Soares and Emerson Pardon1 (2014). Suicidal Ideation and Associated Factors among Adolescents in Northeastern Brazil. *Scientific World Journal*, Volume 2014, Article ID 450943, 8 pages.
- [26] Soren Kliem., Anna Lohmann., Thomas Moble and Elmar Brahler. (2017). German Beck Scale for Suicide Ideation (BSS): psychometric properties from a representative population survey. *BMC Psychiatry* 17:389.