Study on Suicidal Data Using Statistical Analysis

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Abstract— **Descriptive statistics provides simple summary about the sample and the measures. They are used to describe the basic feature of data in a study. Each descriptive statistics minimizes large data into simpler summaries. Descriptive statistics are used to present quantitative descriptions in a manageable form. Some measures that are commonly used to describe a data set are measures of central tendency and measures of variability or dispersion. Central tendency includes mean, median and mode. Measures of the central tendency also includes standard deviation (or variance), minimum and maximum values of the variables, kurtosis and skewness. To the estimates from the World Health Organization (WHO), over 8, 00,000 people die of suicide every year. The main objective of the data analysis is to identify and study the different categories of suicides and examine other critical dimensions impacting suicides and bring out a detailed summary. This paper focuses on the study on suicide data and provides an idea about the variations in the different categories of suicides.**

Index Terms— **Suicide, suicidal data, categories of suicides, causes for suicides, suicidal data analysis**

I. INTRODUCTION

Suicide is defined as killing oneself deliberately. Suicide is a very serious public health problem and one of the top 20 leading causes of death in the world. Suicide is an extremely complex issue, and while it is not possible to pin down its causes. Mental health, specifically depression, is widely recognized as the most important factor. Suicide is nevertheless private and personal act and a wide disparity exists in the rates of suicide across different countries.

A greater understanding of region-specific factors related to suicide would enable prevention strategies to be more culturally sensitive. The rates of suicide have greatly increased among youth, and youth are now the group at highest risk in one-third of the developed and developing countries. Most public attention in India has focused on suicide among farmers. The age and sex specific death totals, death rates, risk factors and mode of suicides among Indian populations are to be studied in depth and observations detailed.

II. DATA AND METHODOLOGY

The data has been taken from secondary sources as included from the contents of the Department of Criminal Justice, USA. There are five aspects proposed to te analyzed in this study ie., social status, educational background, methods adopted to commit suicide, causes for suicides, and profile of such victims of suicides. The southern four states of India,

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namely Andhra Pradesh, Karnataka, Kerala and Tamil Nadu are the defined study area.

The data used for this study is for the period of 2008-2012, and this shall be the base for further studies that shall provide a research lead to studies ongoing presently or likely to be conducted in future. The suicide percentage for the four states for the years 2008-2012 are shown in table 1.

Table 1: Descriptive Statistics

State	Suicide Count (n)	%
Andhra Pradesh	74,070	29
Karnataka	62,443	24
Kerala	42,831	17
Tamil Nadu	78,300	30

III. DATA ANALYSIS

The following section includes data analysis pertaining to the objectives of this study.

Social status of the suicide victims during 2008-2012

The number of total suicide victims in India during 2008-2014 were 2,57,644. Out of these, the number of males were 1,73,096, while that of females were 84,548. Thus, the percentage of male suicide victims was 67.18%, while that of females was 32.81%.
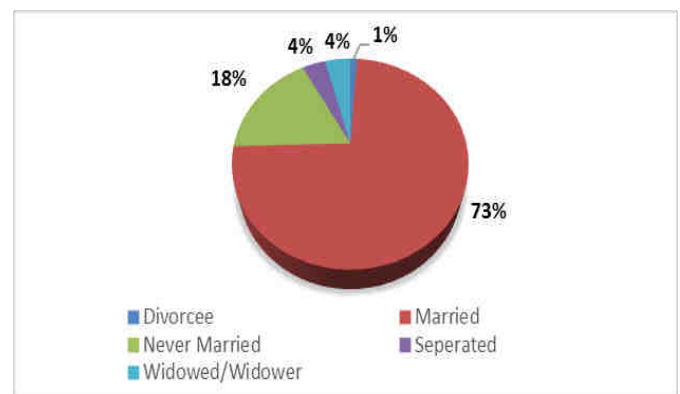

Figure 1: Suicide count (%) based on social status

The number of suicide victims in South India falling under the social status of 'Married' during 2008-2014 was 1,89,115. The percentage of 'Married' suicide victims was 73%, the highest when compared to other categories. Out of these, 1,29,844 were male (68.6 %) and 59,271 were female (31.3%). The second highest is 18%, belonging to the social status category of 'Never Married'. The number of suicide victims in South India belonging to the social status of 'Divorcee' was 2,941, i.e., 1% of the total victims. The category of divorcee happens to be the lowest among all the categories.
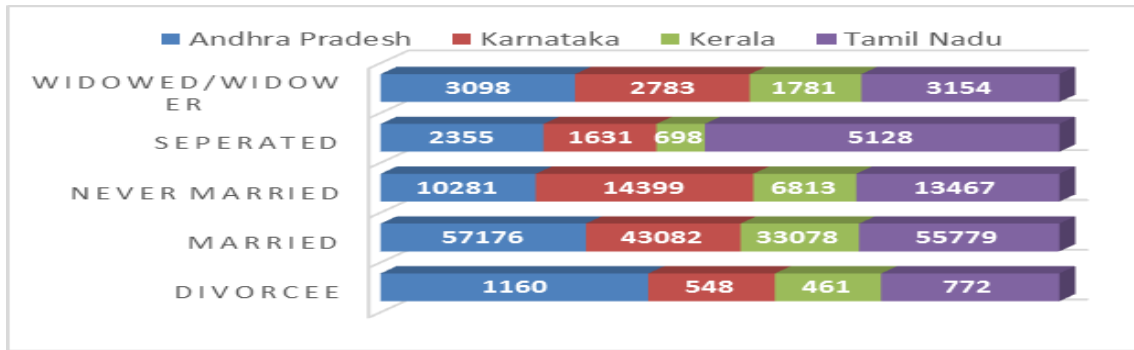
Figure 2: Suicide count of victims based on social status by state

The suicidal count of victims belonging to the status of 'Separated' was comparatively high in Tamil Nadu with a count of 5,128. In Kerala, the number of such victims was the lowest, with a count of 698. The count of victims who were 'Married' is almost equal in all the four States (approx. 47,278).

Educational status of suicide victims during 2008-2012
The educational status of suicide victims' is classified as No Education, Primary, Middle, Matriculate/Secondary, Higher Secondary/ Intermediate/Pre-University, Diploma, Graduate, Post-graduate and above.
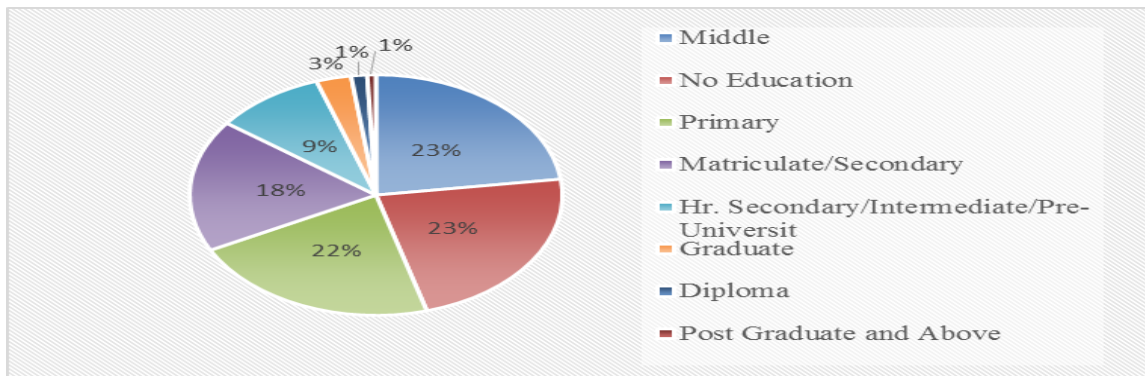

Figure 3: Suicide count (%) based on educational status

The overall comparison of suicide victims based on educational status for both the genders shows that 'Middle' and 'No Education' groups show 23% victims whereas; 'Primary Education' is around 22%. The least is among victims belonging to 'Post-graduate/Diploma and above' category.
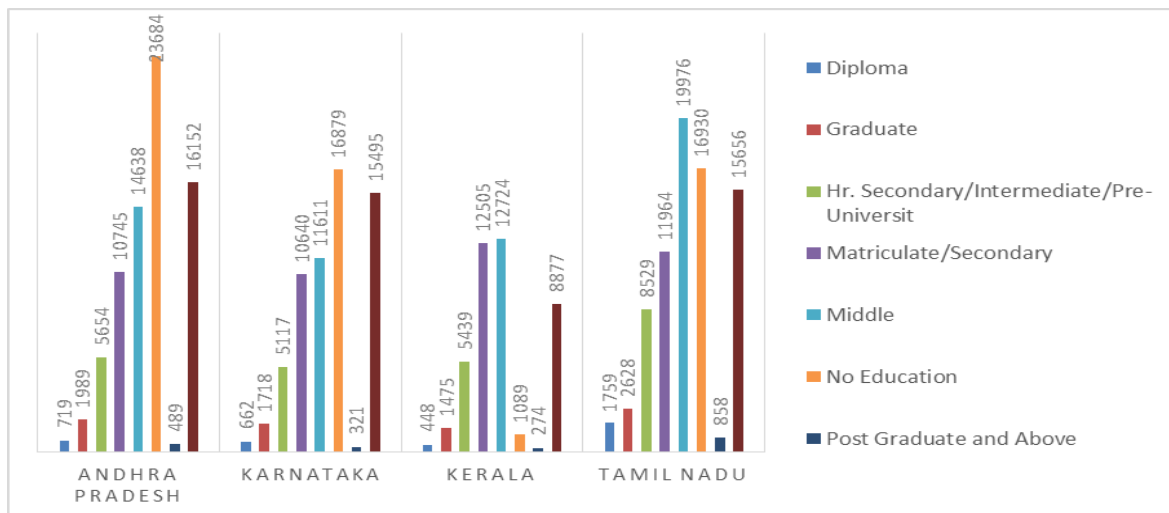

Figure 4: Suicide count of victims based on education status by state

The state-wise analysis shows that Andhra Pradesh has 'No Education' victims count of 23,684 and 'Primary Education' 16,152. In Karnataka, this count is almost equal at 15,495 and 16,879 respectively. In Kerala, the 'No Education' suicide victims group recorded a very low count of 1,089; the count is equal in 'Matriculate/ Secondary' ie., 12,505 and 'Middle Education' level 12,724. Tamil Nadu recorded a high count of 'Middle Education' victims ie., 19,976 followed by 'No Education' victims of 16,930

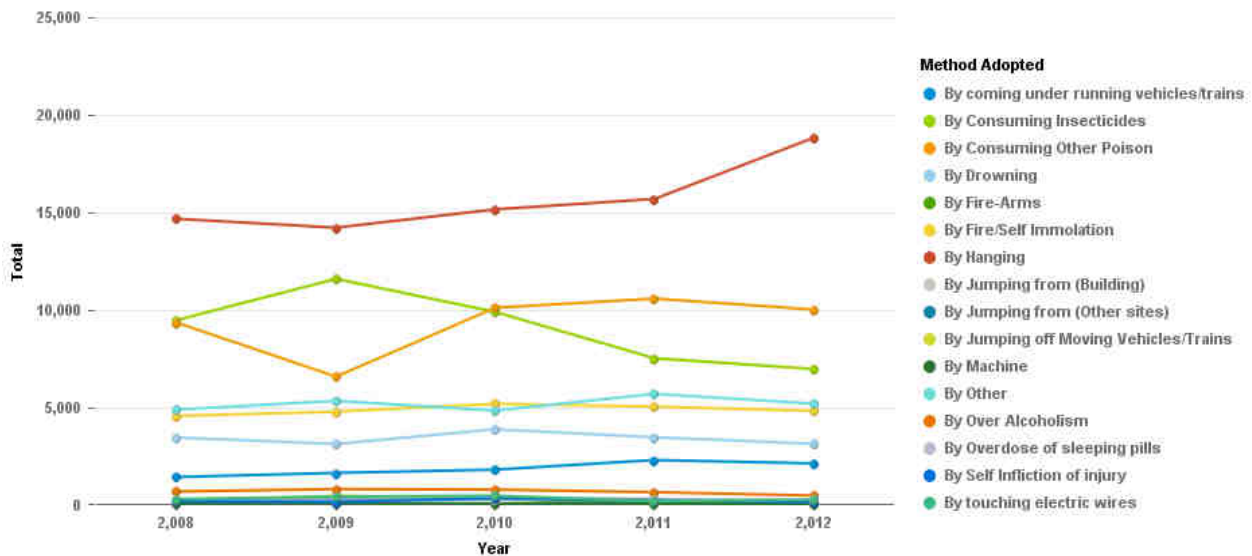Methods adopted by suicide victims during 2008-2012

Figure 5: Year wise trend of suicides based on method adopted

While discussing about the methods adopted by suicide victims, suicides via hanging oneself has increased from 15,673 in 2011 to 18,816 in 2012. In the year 2009, the number of victims who adopted the method of consuming insecticide was 11,572, by 2012 there is a drastic decreases in the number of such victims (count = 6, 946), this may be due to government regulation in buying of insecticide. May be after the regulations, the victims have adopted the method of suicide by consuming other poison. Hence, in the year 2009 the count was 6,552 and in 2012 the count was 9,998.
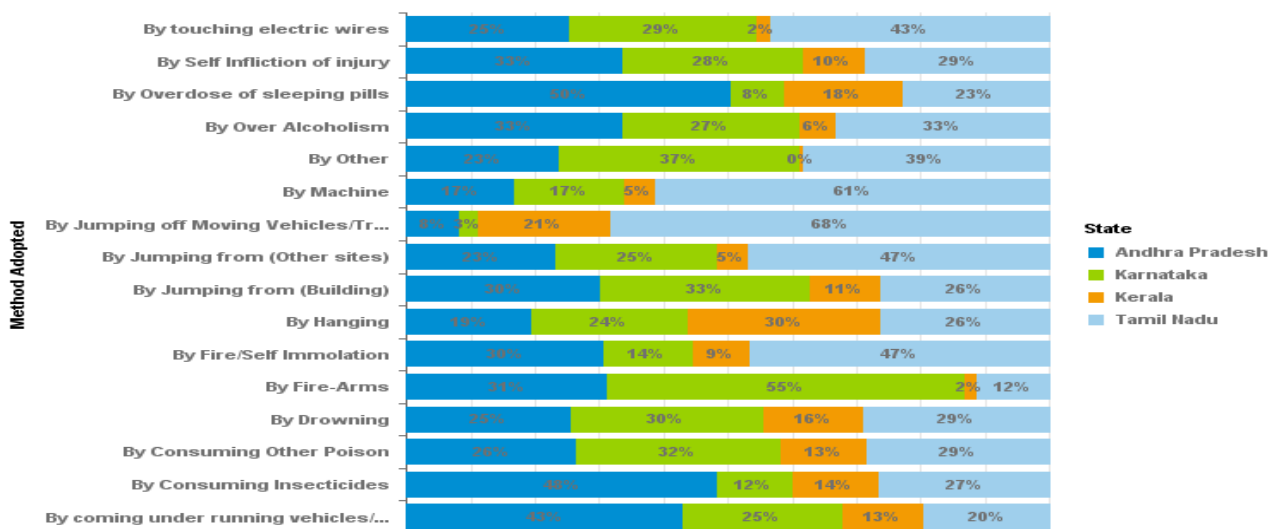

Figure 6: Percentage of suicides among the 4 states based on method adopted

Methods adopted - Ranked state wise (both gender)
Andhra Pradesh –
- Overdose of sleeping pills – 50%
- Consuming insecticide – 48%
- Coming under running vehicle – 43%

Tamil Nadu –
- Jumping off moving vehicle/ train – 68%
- By machine – 61%
- Jumping off from other sites/ buildings – 47%
- Self-immolation/ Fire – 47%

Karnataka –
- Fire arms – 55%
- Jumping from building – 33%

Kerala –
- Hanging – 30%
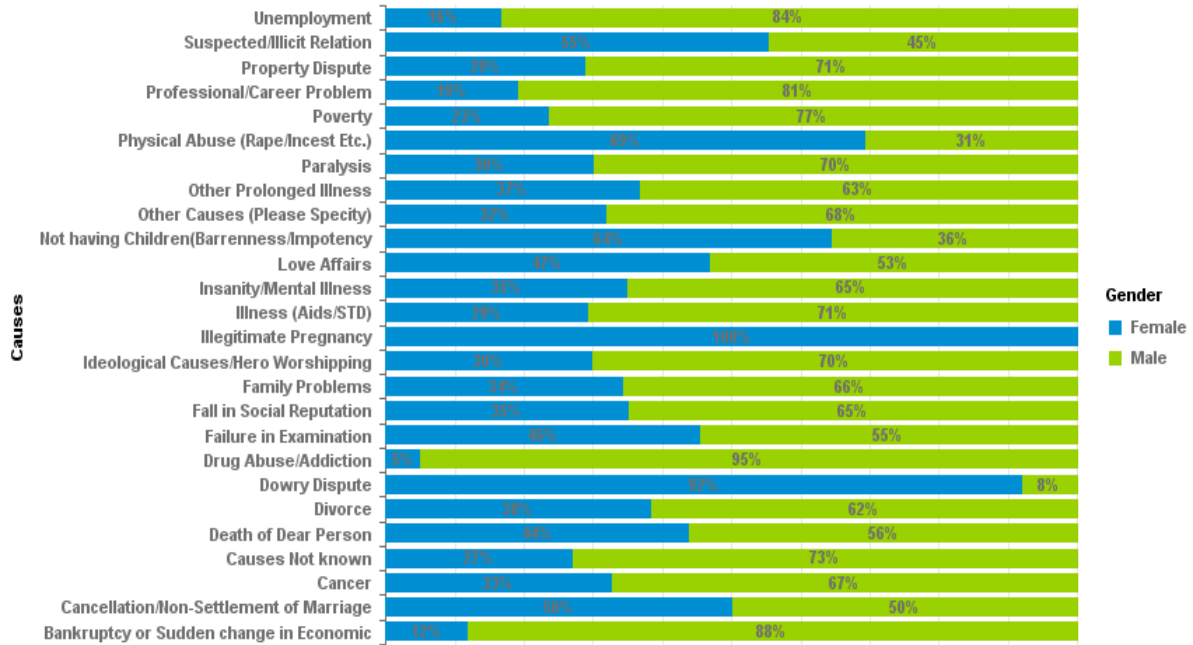
Causes of suicide during the years 2008-2012

Figure 7: Percentage of suicide victims (males vs. female) based on method adopted

From figure 7 it is inferred that, the top 5 reasons for females committing suicide are:
- Dowry disputes - 92%
- Illegitimate pregnancy - 100%
- Physical abuse - 69%
- Not having children - 64%
- Suspected relationships - 55%

Whereas, the top 5 reasons for males committing suicide are:
- Drug addiction - 95%
- Bankruptcy/ change in economic status - 88%
- Unemployment - 84%
- Carrier problem - 81 %
- Poverty - 77%

There is an equal percentage of male and female victims who have committed suicide due to Cancellation and Non-settlement of Marriage (Male - 50%, Female – 50%).

Table 2: Descriptive Statistics based on age group of suicide victims

Age Group	0-14		15-29		30-44		45-59		60+	
Causes	n	%	n	%	n	%	n	%	n	%
Family Problems	581	14.00%	19,582	25.51%	23,897	27.49%	16,627	26.62%	6,105	22.31%
Prolonged Illness	530	12.77%	12,624	16.45%	14,433	16.60%	12,583	20.15%	7,471	27.30%
Insanity/ Mental Illness	191	4.60%	4,500	5.86%	5,302	6.10%	4,194	6.72%	2,645	9.67%
Love Affairs	238	5.74%	4,447	5.79%	763	0.88%	109	0.17%	8	0.03%
Poverty	93	2.24%	2,272	2.96%	3,537	4.07%	2,677	4.29%	752	2.75%
Failure in Examination	552	13.30%	2,595	3.38%	111	0.13%	31	0.05%	3	0.01%
Illegitimate Pregnancy	1	0.02%	153	0.20%	61	0.07%	6	0.01%	0	0.00%
Unemployment	9	0.22%	1,649	2.15%	1,184	1.36%	497	0.80%	91	0.33%
Bankruptcy or Sudden change in Economic	21	0.51%	1,284	1.67%	3,407	3.92%	2,615	4.19%	737	2.69%

Among all the age groups the common reason for suicide is 'family problems'. On ranking the causes, it is concluded that the first main cause is 'family problem', followed by 'prolonged illness', 'mental illness' and 'poverty'. Among the age group 0-14 years, major reasons for suicides happen to be 'family problem' (14%), 'failure in examination' (13.3%) and 'prolonged illness' (12.77%).

On comparing with other age groups, 15-29 years group has the maximum count of suicide victims of 2,595 is due to 'failure in examination'. 'Love affair' is also a major reason for the highest count (4,447) of suicide victims (comparing all age groups). Suicide cases in the age group of 60 years and above are due to 'prolonged illnesses' or impediments due to aging factor.

Profile of the suicide victims during the year 2008-2012
The professional profile of the victims has been classified as House Wife, Service (Government), Service (Private), Public Sector Undertaking, Student, Unemployed, Self-employed (Business activity), Professional Activity, Farming/Agriculture Activity and Retired Person.
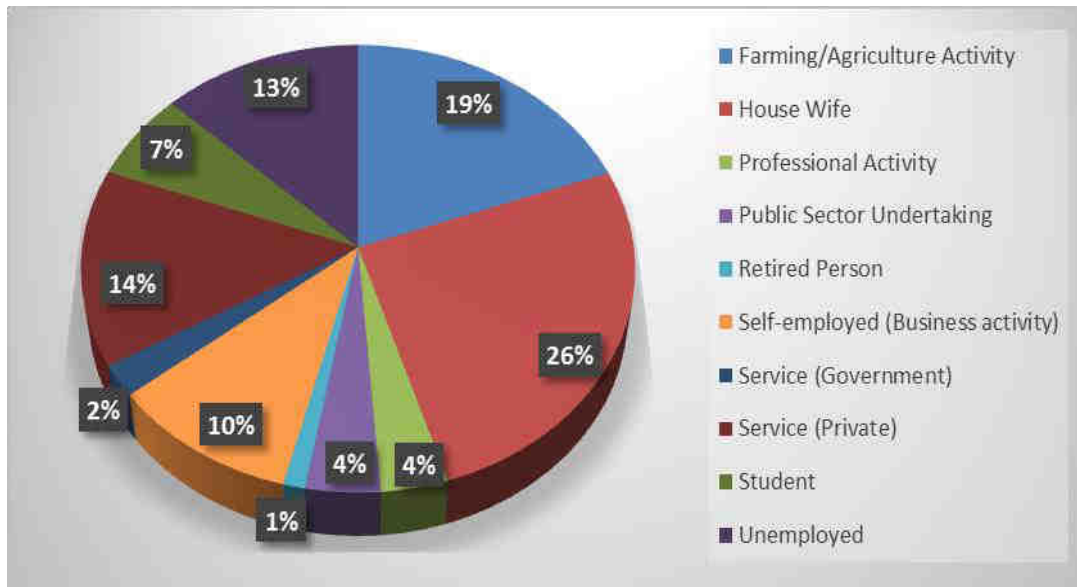

Figure 8: Percentage of suicide victims based on their profile

According to the study, females - housewives have the highest suicide count when compared to the other professions in both genders. The highest suicide count of Housewives (females) is nearly 26% out of the total count of 1,55,764. The second highest suicide count records in the sector of Farming/Agriculture Activity (count – 30,158). The profile with the lowest suicide percentage is Retired Person, 1% with a count of 1,816.
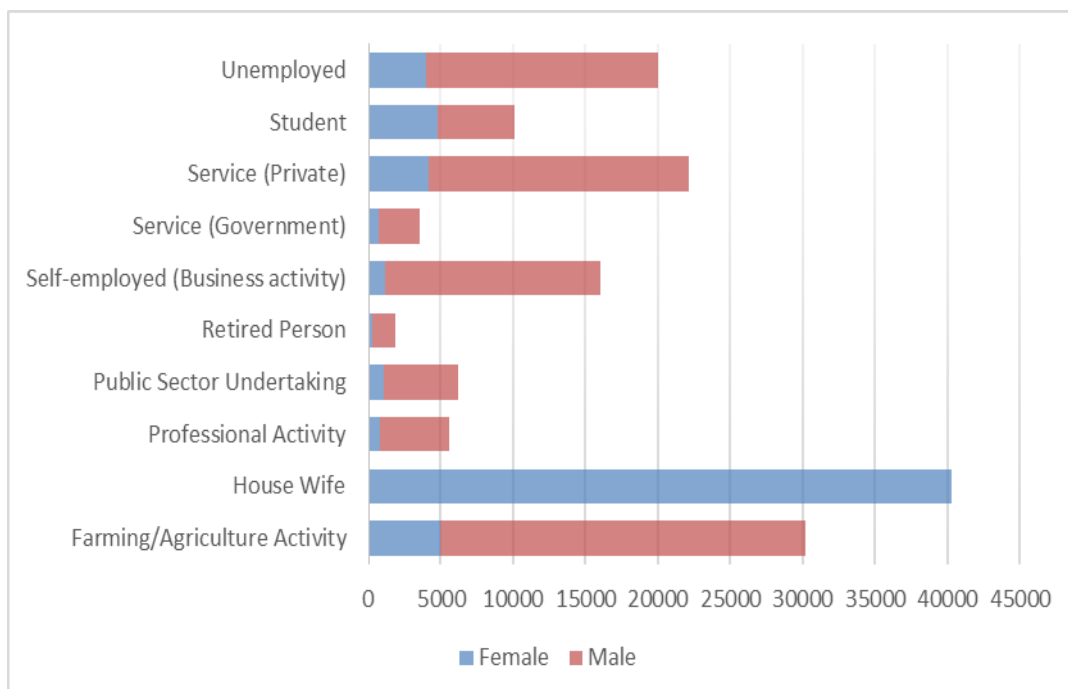

Figure 9: Comparison between male and female victims based on their profile

From Figure 8 it can be inferred that, in sectors of Farming/Agriculture Activity male are the major victims having a count of 25,195 out of a total count of 30,158, nearly 84%. Figure 9 depicts that male are the major victims in all profiles listed, except 'House Wife'.

FINDINGS

In recent years, the case of students and farmer committing suicide has been on a higher rate. Over the years (2015-18) more than 26,000 students have committed suicide in India. Most of the students who had committed suicide have been found to be because of stress, depression and anxiety, which had become a common problem. During 2017-18, results showed an average of more than 10 farmers committing suicide every day. There are accusations on the local governing bodies and the state government for manipulating the data pertaining to suicides and attempt to commit suicide; as a result it is felt that the real figures of such suicides could be even higher. In contrast to the general population in all the four states, the percentage of the suicide count has been differing. Suicide percentage of males is greater than the females in most of the sectors.

CONCLUSION

In India, it is observed that, there is an increase in the number of farmers committing suicide year after year. Even though awareness is been created, there seems to be no sign of decrease in the rate of such suicides. Future studies should focus on investigating the causes of suicide by various aspects impacting victims such as, social status, educational status, methods adopted, causes and profile. In addition, international studies pertaining to suicide count and rates should be conducted very often so as to understand the grounds of differences across countries.

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