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Histological Study of Uterus and Ovary in Cases of Suicidal Deaths of Women in Their Reproductive Age Group Within The Jurisdiction Of Nrsmch Morgue, Kolkata

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Abstract:- *The death by suicide is complex problem which involves multiple factors. Female suicides constituted 46% of the total suicides. The predominant factors are found to be chronic illness, harassment by relatives, depression and financial problems. Suicidal behavior was also found to be influenced by various phases of menstrual cycle. The present study aims to determine the prevalence of suicidal deaths in different stages of menstrual cycle of women within their reproductive age group by histopathological study of uterus and ovary for formulation of preventive measures along with medical and psychological support to reduce suicidal tendency in female sex. 91 cases of suicidal deaths among women within their reproductive age group (15 to 45 years) were selected from NRSMC&H police morgue. It was found that women committed suicide most commonly in Late Secretory phase of their menstrual cycle. Definite biological explanation is till now a mystery. As an epidemiological study, it has just highlighted the relationships between different parameters in a particular area.*

Key Words:- *suicide, female, menstrual cycle, histopathology, uterus, ovary.*

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I. Introduction

Determination of manner of suicide has its own importance from both medical and legal point of view. Sometimes an individual may die without proper diagnosis of the disease which led to his/ her death. At times an individual may die without any pre existing fatal disease. In all such cases medico legal or pathological autopsy is needed to find out the cause as well as manner of death. An unnatural death may be suicidal, homicidal or accidental. A Forensic Medicine expert should find out the manner to help judiciary system and to connect the medical science with the law by conducting autopsy examination. Within this study only suicidal deaths will be dealt with. There are several factors which are considered as risk factor for suicidal behavior. The term suicide means taking away of one's own life. There are various means/ ways by which a person can commit or attempt to commit suicide like burn, poisoning, hanging, cut throat etc. In present scenario suicidal attempts amongst young and middle aged females have alarmingly increased which may be due to many factors like mental depression, familial or social disharmony or some sort of provocation either alone or in combination of more than one such factors. Such attempts can occur at any time during their menstrual cycle.

II. Aims and Objectives

In India death due to commission of suicide by hanging, burning, poisoning is very common among women between 15 yrs to 45 yrs of age. As per records available it is observed that 273 women of this age group died by committing suicide from Jan to middle of Nov in 2017 within the jurisdiction of NRSMCH police Morgue. Aim of this study is to determine the prevalence of suicidal deaths in different stages of menstrual cycle of women within their reproductive age group by histological study of uterus and ovary for formulation of preventive measures along with medical and psychological support to reduce suicidal tendency in female sex. Specific objectives of this study are-

1) To find out different patterns of suicidal deaths among women within their reproductive age group reported at NRSMCH police morgue.
2) To enquire from relatives, friends to find out the underlying causes which lead to suicidal deaths.
3) To find out co-relation of suicidal deaths in women with the status of uterus on histological examination.

To find out co-relation of suicidal deaths in women with the status of ovary on histological examination.

Inclusion & Exclusion Criteria:-

Inclusion Criteria:-

(1) Females within reproductive age group (15-45 yrs).
(2) Unnatural deaths due to burning, hanging, poisoning which are usually suicidal in nature unless proved otherwise.

Exclusion Criteria:-

(1) All decomposed dead bodies
(2) All the cases where suicidal attempt occurred before 48 hrs of post mortem examination.
(3) Where obvious tendency to commit suicide cannot be established beyond doubt.
(4) All diseased uterus and ovary.

III. Materials and Methods

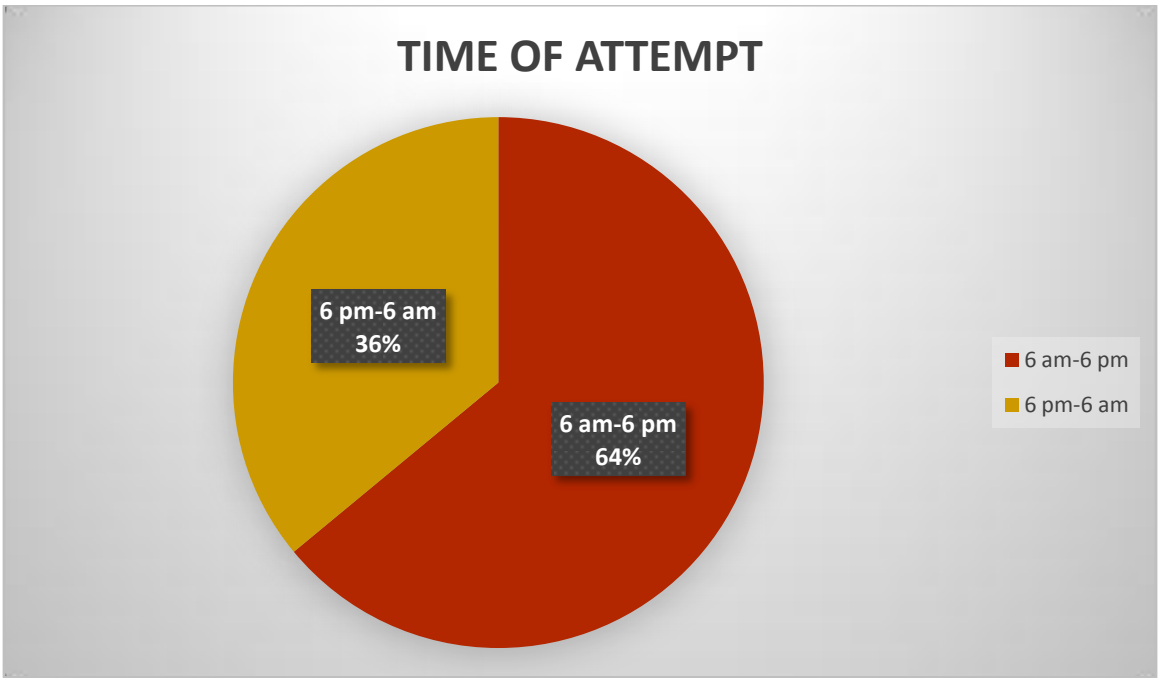
This study was done in the department of Forensic & State Medicine and Dept. of Pathology NRS Medical College, Kolkata. The cases included in this study were conducted in Mortuary attached to the dept of FSM from Jan to middle of November 2017. 91 cases were examined. The cases were studied giving due consideration to the reproductive age group (15 yrs to 45yrs) of the women. Details about the victims regarding the age, address, marital status, date and time of suicidal attempt, date and time of death and menstrual history where available were obtained from police requisition and inquest and also from victims available close associates. As the cases were sent by the police considering being medico legal, consent was not required. Every third subject was taken with a random start by systemic random sampling and it was a cross sectional study.

Study Tools:- Performa, Autopsy instruments, Plastic containers, 10% formal saline, Graded alcohol, Absolute Alcohol, Acetone, Xylene, Paraffin, Leukart L blocks, Incubator, Microtome, Porcelin bowls, Glass slides, Cover slips, HE Stain, Acid alcohol, Microscope.

Result Analysis

Table-1: Suicidal rate in relation to time of attempt

Time of attempt	Number	Percent
6 am to 6 pm	58	63.7
6 pm to 6 am	33	36.3
Total	91	100.0



Out of 91 cases, 58 women (64%) committed suicide between Sam to 6pm and 33 women (36%) committed suicide between 6pm to 6am

Table 2: Suicidal rate in relation to religion

Religion	Number	Percent
Hindu	68	74.7
Muslim	23	25.3
Total	91	100.0

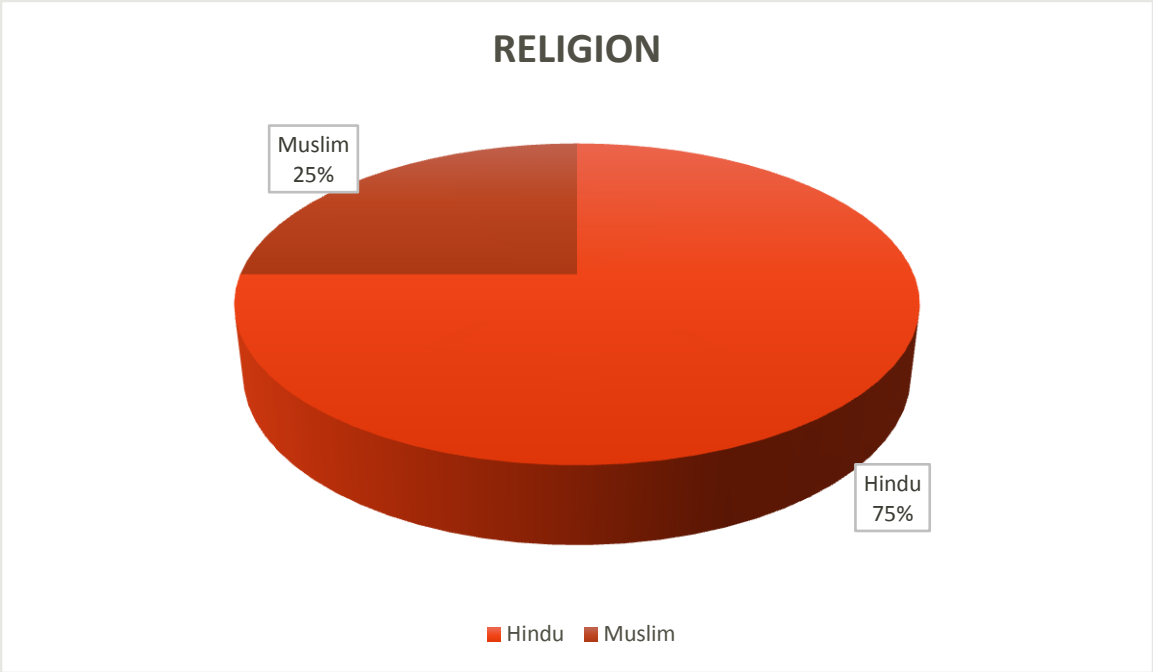
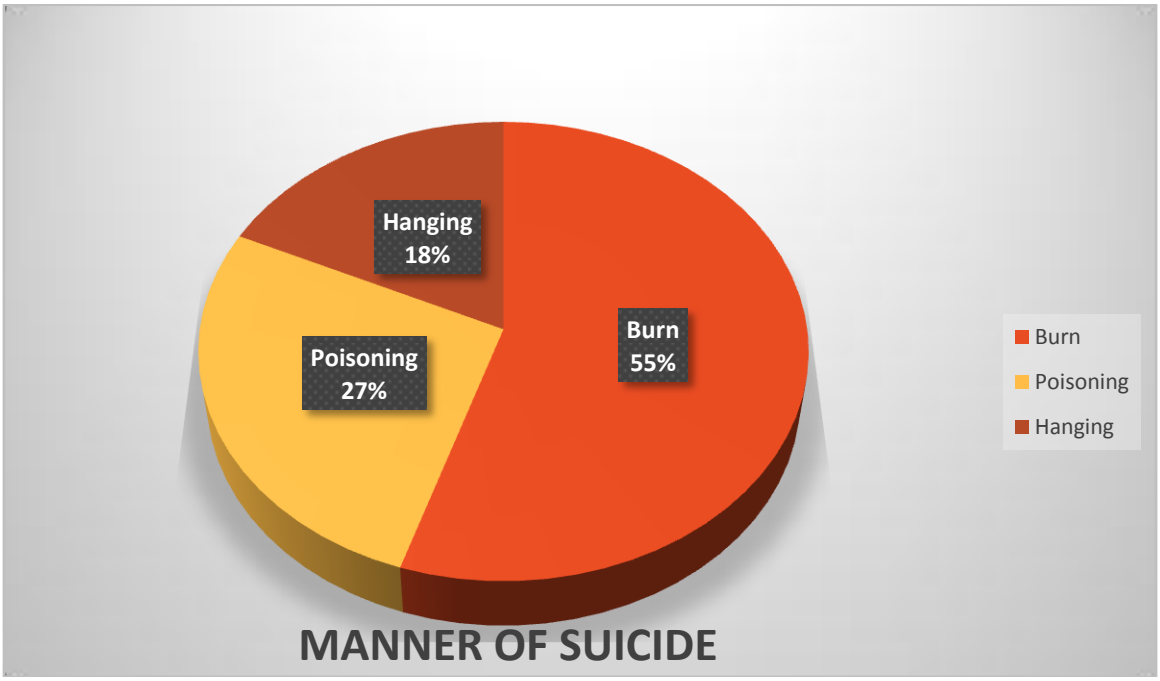


Table 3: Suicidal rate in relation to manner of suicide

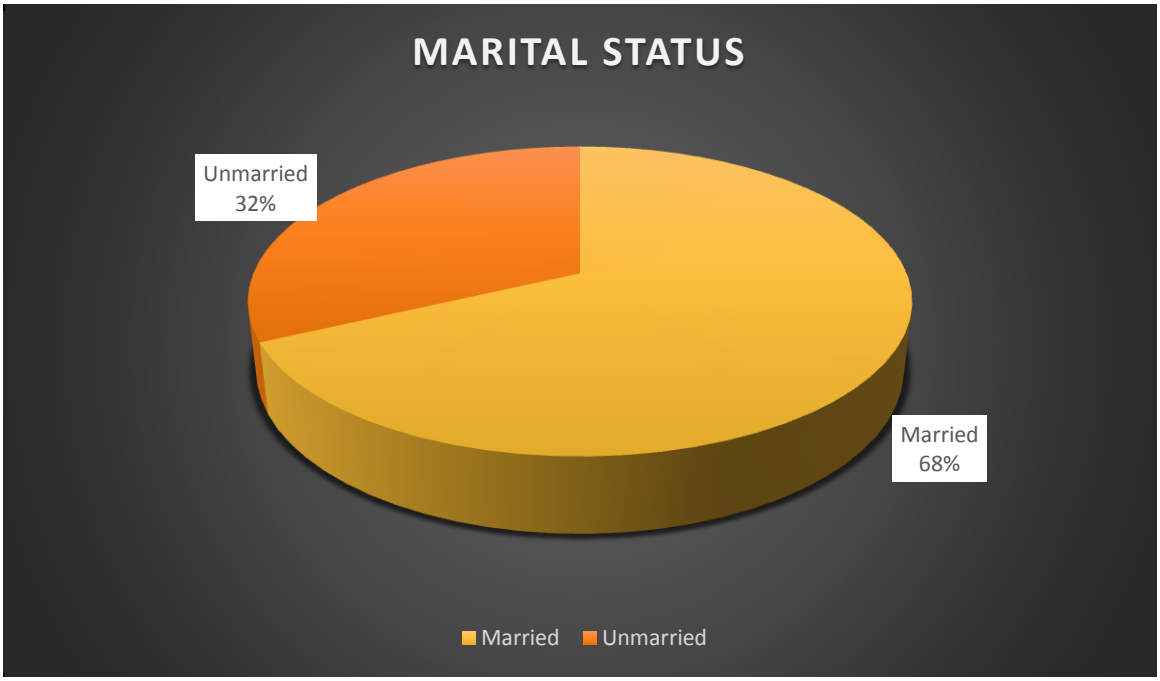
Manner of suicide	Number	Percent
Burning	50	54.9
Hanging	16	17.6
Poisoning	25	27.5
Total	91	100.0



Out of 91 cases, 50 women (55%) committed suicide by burn,16 women (18%) committed suicide by hanging and 25 women (27%) committed suicide by poisoning.

Table-4: Suicidal rate in relation to marital status

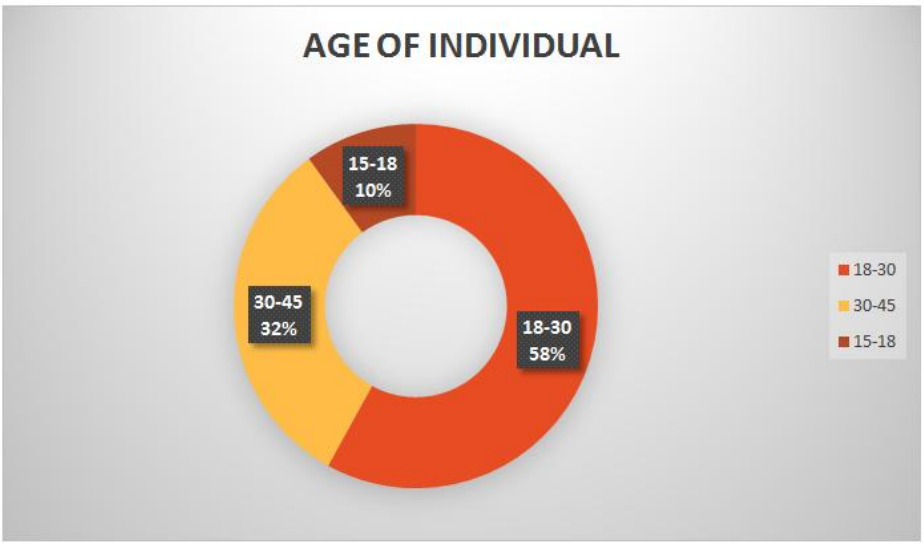
Marital Status	Number	Percent
Married	62	68.1
Unmarried	29	31.9
Total	91	100



Out of 91 cases committing suicide, 62 women (68%) were married and 29 women (32%) were unmarried.

Table 5: Suicidal rate in relation to age of individual

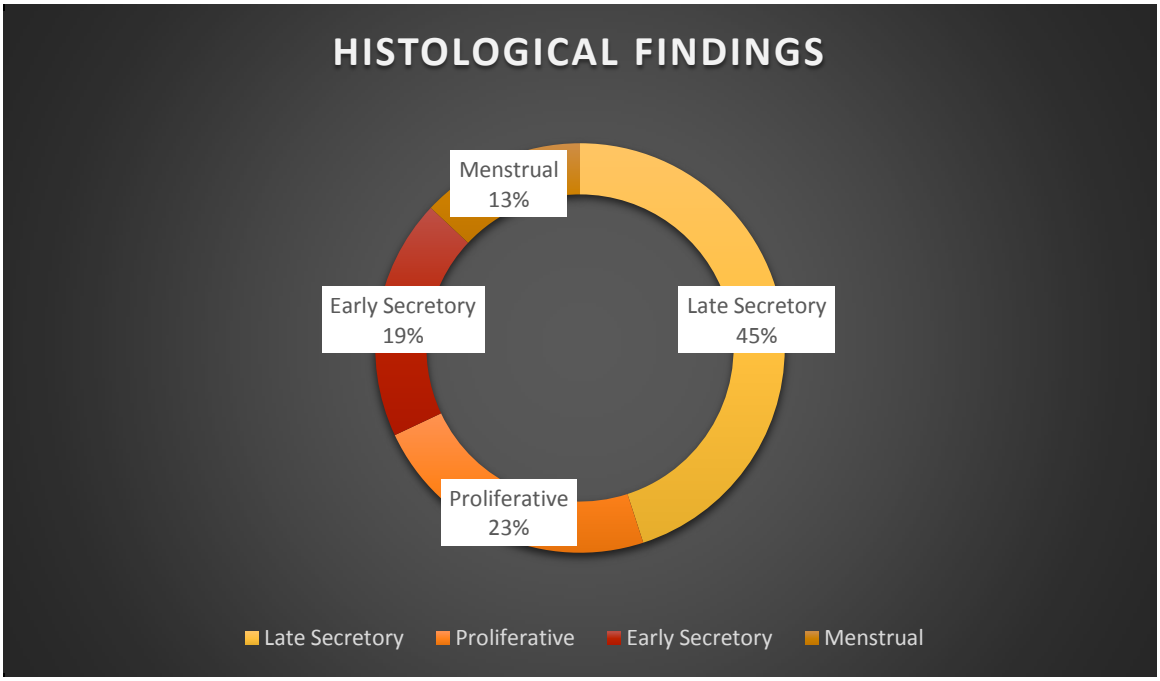
Age	Number	Percent
15 to 18 years 18 to 30 years 30 to 45 years	9	9.9
Total	53	58.2
	29	31.9
	91	100.0



Out of 91 cases committing suicide, 9 women (10%) were between 15 to 18 years (Adolescent), 53 women (58%) were between 18 to 30 years (Young adult) and 29 women (32%) were between 30 to 45 years (Middle aged).

Table 6: Suicidal histological findings of uterine endometrium and ovary

Histological findings	Number	Percent
Early Secretory	17	18.7
Late Secretory	41	45.1
Menstrual	12	13.2
Proliferative	21	23.1
Total	91	100.0



Out of 91 women, 17 women (19%) committed suicide in early secretory phase, 41 women (45%) in late secretory phase, 12 women (13%) in menstrual phase and 21 women (19%) in proliferative phase of their menstrual cycle

Table 7: Relation between Marital status and histological findings of uterine endometrium and ovary

Histological Findings	Married	Unmarried
Early Secretory	13(21%)	4 (13.8%)
Late Secretory	34(54.8%)	7 (24.1%)
Menstrual	2(3.2%)	10 (34.5%)
Proliferative	13(21%)	8 (27.6%)
Total	62(100%)	29 (100%)

Pearson Chi-square value = 19.692, df = 3, p value < .001
So there is an association between Histological findings and Marital status.

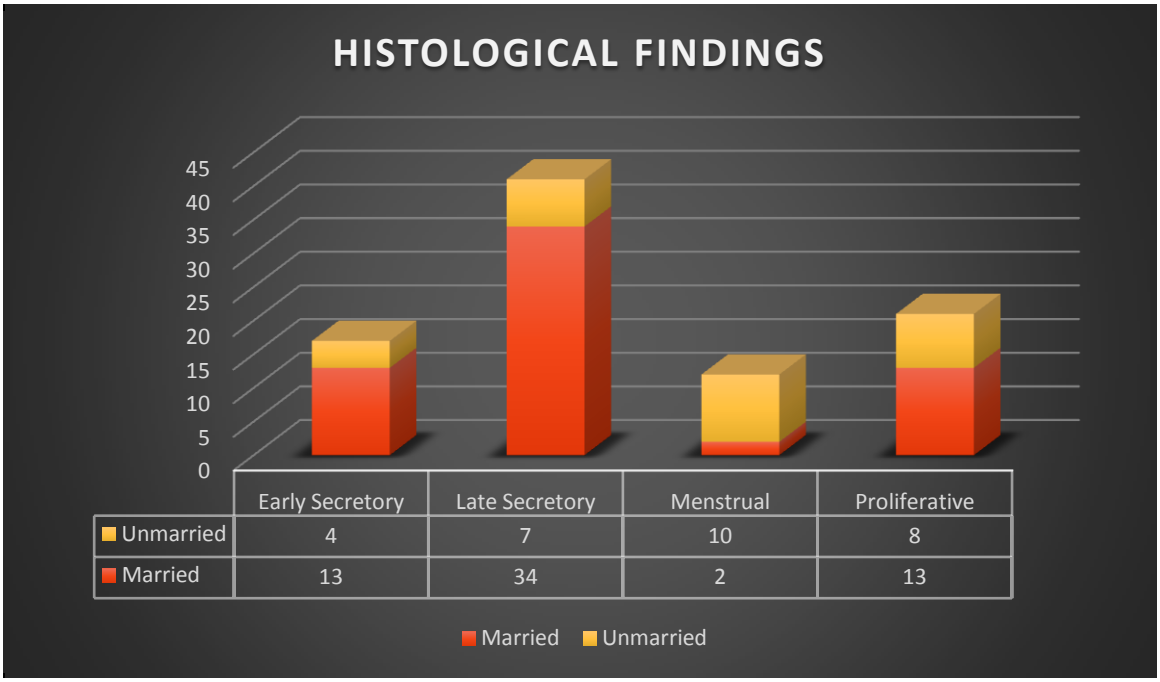


Table 8: Relation between Religion and histological findings of uterine endometrium and ovary

Histological Findings	Hindu	Muslim
Early Secretory phase	12 (17.6%)	5 (21.7%)
Late Secretory phase	31 (45.6%)	10 (43.5%)
Menstrual phase	10 (14.7%)	2 (8.7%)
Proliferative phase	15 (22.1%)	6 (26.1%)
Total	68 (100%)	23 (100%)

Pearson Chi-square value = 0.763, df = 3, p value = 0.858

No association between Histological findings and religion could be established.

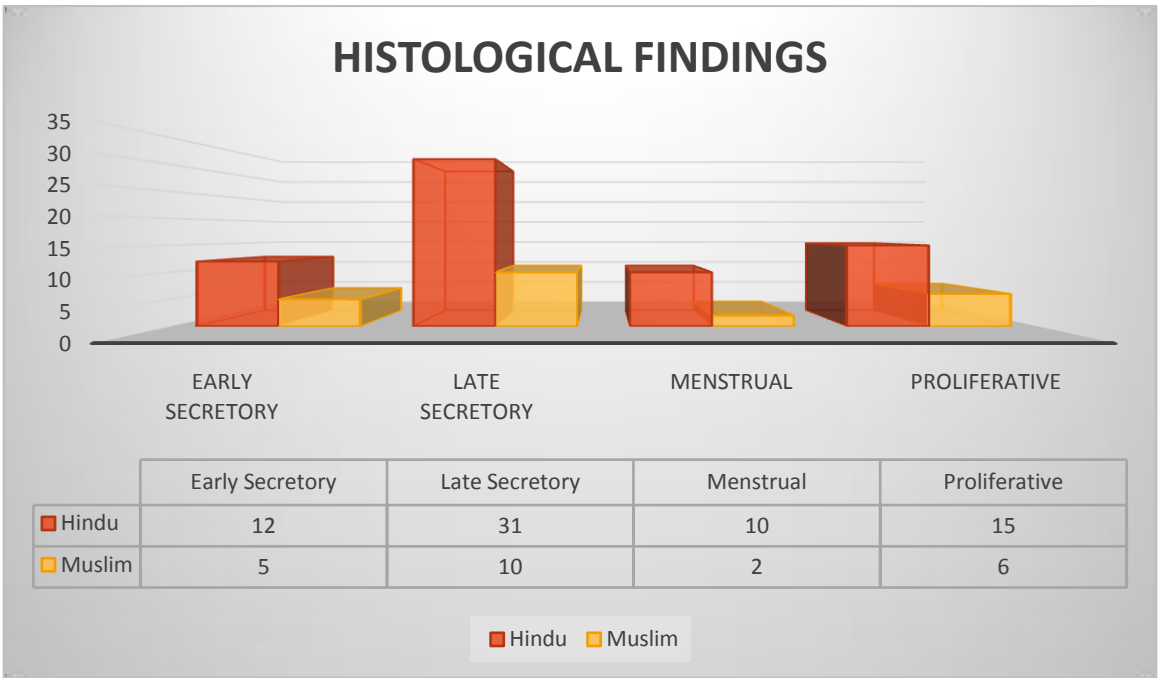


Table 9: Relation between Manner of suicide and Histological findings of uterine endometrium and ovary

Histological Findings	Burn	Hanging	Poisoning
Early Secretory phase	8 (16%)	5 (31.2%) 4 (25%)	4 (16%)
Late Secretory phase	26 (52%)	3 (18.8%)	11 (44%)
Menstrual phase	6 (12%)	4 (25%)	3 (12%)
Proliferative phase	10 (20%)	16 (100%)	7 (28%)
Total	50 (100%)		25 (100%)

Pearson Chi-square value = 4.560, df = 6, p value = 0.601

So no association between Histological findings and Manner of suicide could be established.

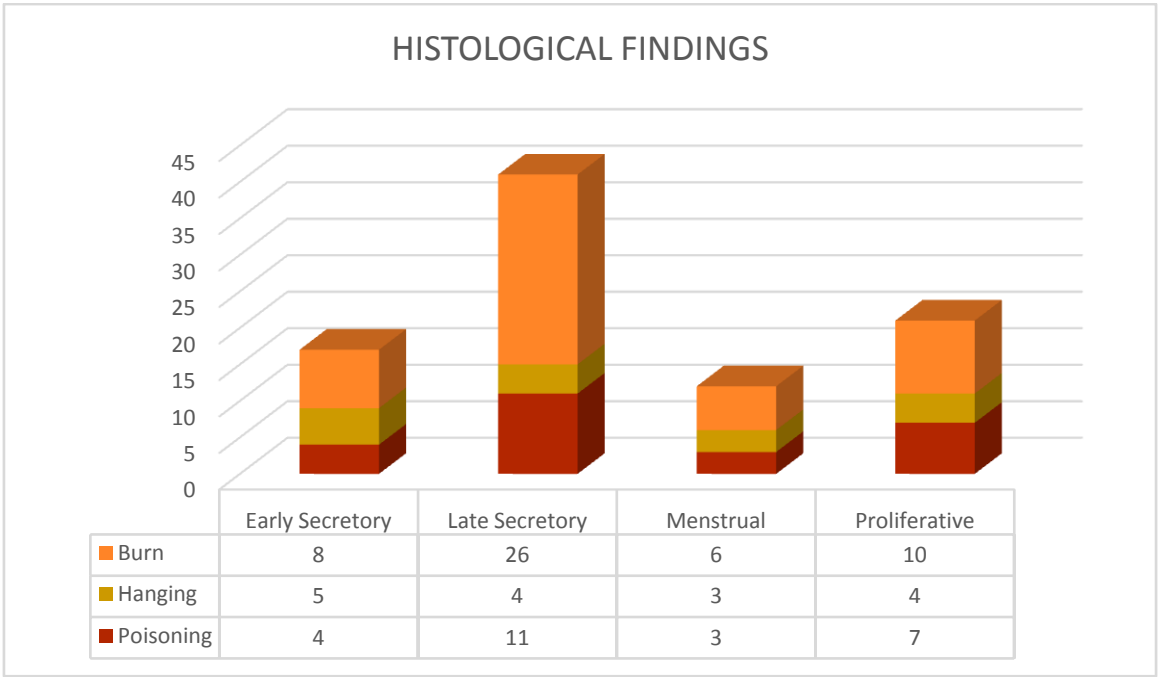


Table 10: Relation between Time of attempt and Histological findings of uterine endometrium and ovary

Histological Finding	6am to 6pm	6pm to 6am
Early Secretory phase	12 (20.7%)	5 (15.2%)
Late Secretory phase	27 (46.6%)	14 (42.4%)
Menstrual phase	6 (10.3%)	6 (18.2%)
Proliferative phase	13 (22.4%)	8 (24.2%)
Total	58 (100%)	33 (100%)

Pearson Chi-square value = 1.435, df= 3, p value = 0.697

So there is no association between Histological findings and Time of attempt

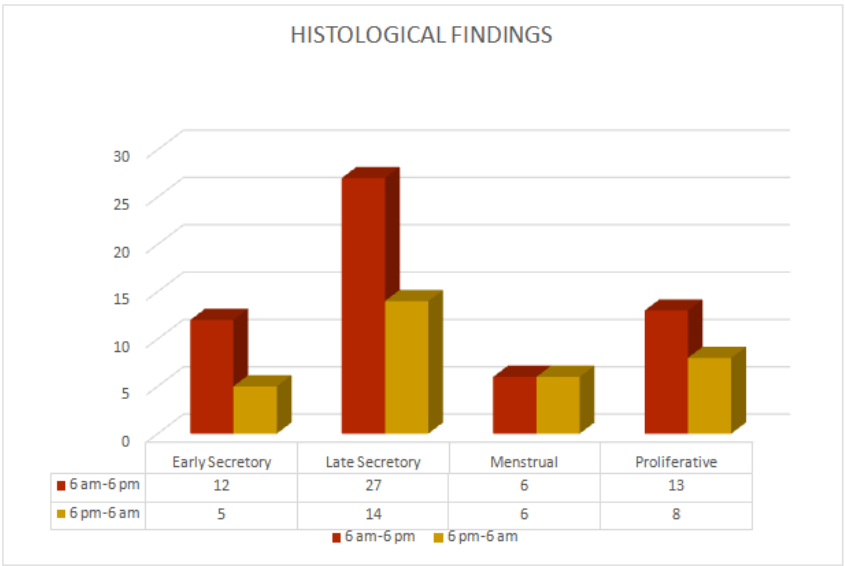
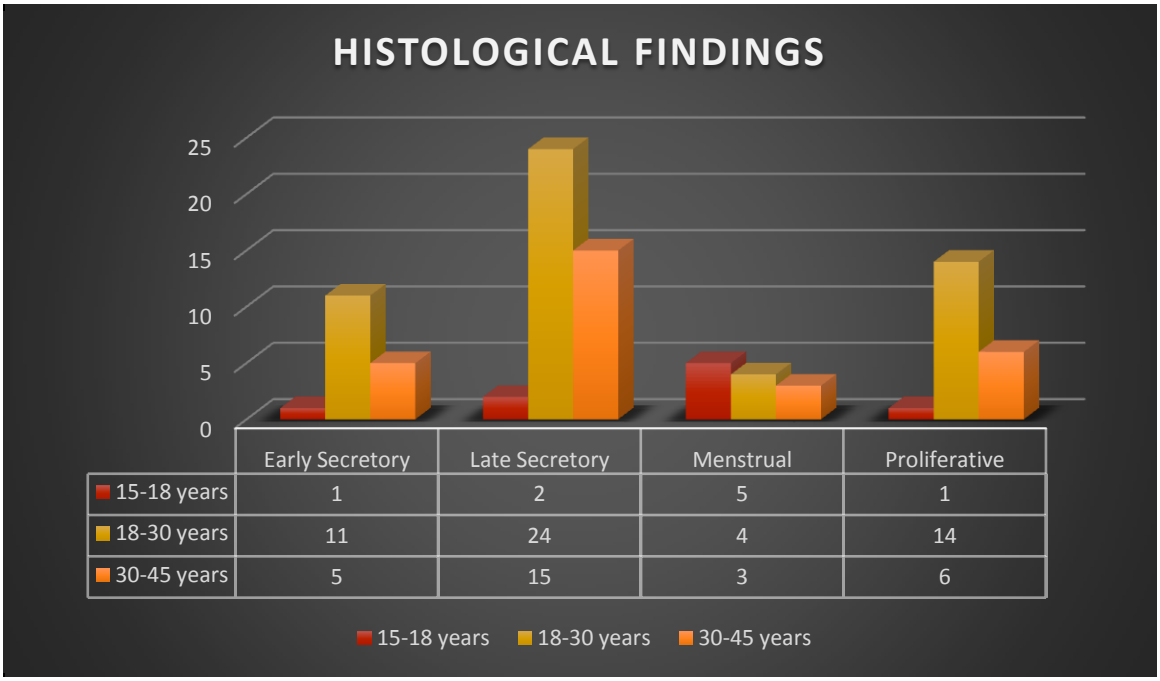


Table-11: Relation between Age of individual and Histological findings of uterine endometrium and ovary

Age	Early Secretory phase	Late Secretory phase	Menstrual phase	Proliferative phase
15 to 18 years	1 (5.9%)	2 (4.9%)	5 (41.7%)	1 (4.8%)
18 to 30 years 30 to 45 years	11 (64.7%)	24 (58.5%)	4 (33.3%)	14 (66.7%)
	5 (29.4%)	15 (36.6%)	3 (25%)	6 (28.6%)
Total	17 (100%)	41 (100%)	12 (100%)	21 (100%)

Pearson Chi-square value = 16.352, df = 6, p value = .012
So there is an association between Histological findings and age of individual.

Here 15 to 18 years is considered as adolescent, 18 to 30 years is considered as young adult and 30 to 45 years is considered as middle age.



IV. Discussion

In present study, it is observed that incidence of commission of suicide was most common (53 out of 91 i.e., 58.2%) among young adult women between 18 to 30 years of age. This finding is in concurrence with the statistics brought by AASRA, 2010, where it was observed that 139 women committed suicide per day within 30 years, whereas 123 committed suicide between 30 to 40 years per day. This observation also corroborated with the study of Dr. Patel V, published in Lancet, 2010, according to which women between 15 to 29 years of age are mostly vulnerable to commission of suicidal attempt. This observation was not in concurrence with the observation of Brindley B, 2011, report from John Hopkins Bloomberg School of Public Health's Center for Injury Research and Policy, 2008 and report from Substance Abuse and Mental Health Services Administration (SAMHSA).

According to these observations and reports, suicidal attempt is more common amongst middle aged and elderly women outside India.

In the present study, it is observed that 62 women out of 91(68.1%) were married whereas 29 (31.9%) were unmarried. This is at par with observation of AASRA where it was reported that out of 130 women, who commit suicide every day, 69 are housewives. The resent observation is also consistent with the observation of PatelV, 2012, published in Lancet, where it was concluded that marriage a risk factor for depression, which is of course the commonest Psychological factor associated with suicide. Present observation is also supported by the report from New Delhi which reveals, nearly 70% of women committing suicide in India are married while only 30% women are unmarried. Observation of Randy A. Sansone et al, 2007 is also in concurrence with the observation of present study. According to the author, 64.5% women were married, 29.2% were unmarried and 3.5% did not indicate any marital status. According to National Crime Record Bureau- Ministry of Home Affairs--married women attempted to commit suicide more than unmarried women from 2007 to 2010.

Suicide may be committed by various means. In this study burn, hanging, poisoning has been considered as manner of suicidal attempt. Here it was found that 54.9% (50 out of 91) women preferred burn, 27.5% (25 out of 91) women preferred poisoning whereas 6% (16 out of 91) women have chosen hanging for commission of \suicide.

According to various studies, poisoning is the commonest manner of suicide worldwide. AASRA reported that 33.1% of suicide victims consumed poison, 31.4% died by hanging, 10% by burning and 4% by drowning in 2010. Suicidal rate by hanging fluctuated during last 3 years, while that by poisoning decreased and by burning increased. According to Vadiveloo J, more females die from drug overdose than other methods of suicide in Australia. Article fromFrost's Meditations and Centre for suicide research, University of Oxford, titled 'Methods used for suicide' revealed—most common three methods of suicidal attempts are hanging, firearm and poisoning.

In present study, commission of most of the suicide took place between 6 am to 6 pm (58 out of 91 i.e., 63.7%) and rest 33 (36.3%) took place between 6pm to 6am. This indicates the diurnal variation of suicidal tendency.

According to the observation of Preti A and Miotto P, suicidal attempt was more common in day time, particularly during late morning (8am to I lam) and late afternoon (4pm to 7pm) only in cases of young age group whereas the incidence subsequently decreased in night hours.This part of the observation to some extent is similar with the present observation. In the same study, it was also noticed that in case of adults (25 to 44 years) there was a less pronounced peak between morning and early afternoon hours. So this part of the observation does not agree with present finding.

From the religious point of view, 74.7% (68 out of 91) women were Hindu and 25.3% (23 out of 91) were Muslim who committed suicide. It was just an epidemiological analysis. Factor responsible for this finding may be due to difference in ratio of population between these two religions within the study area. Cultural, socio-economic and psychological factors may have some contribution behind it.

While the relation between rate of commission of suicide and phase of menstrual cycle is studied, it was observed that among those who committed suicide, 18.7% (17 out of 91) were in early secretory phase, 45.1% (41 out of 91) were in late secretory phase, 13.2% (12 out of 91) were in menstrual phase and 23.1% (21 out of 91) were in proliferative phase. So it can be concluded that secretory phase dominated over proliferative and menstrual phase in these 91 women.

McKinon et al pointed out a relationship between completed suicide and luteal phase or secretory phase. As per the review of Weztel and Mc Clure on suicide completion, suicidal attempt and suicidal threat, in 5 of the studies over a period of past 40 years, observed that the suicidal attempt during 4^{th} week i.e., in secretory phase of menstrual cycle was more frequent; in another 5 studies, it was revealed that suicidal attempt or completion is more common during menstrual phase and proliferative phase; in other 2 studies, it was observed that such incidence occurs more frequently during 1^{st} week (proliferative phase), 4^{th} week (late secretory phase) and perimenstrual week (menstrual phase) whereas in rest 6 studies, it was not possible to find any relation between these two parameters.

Glass et al and Tonks et al observed that the premenstrual phase is a period of increased vulnerability to suicidal attempts.

Gaul S, 2009 opined that generally during the time when a woman is fertile (before and during ovulation), she will be more friendly, motivated, energetic and positive. Throughout the days before and during period, a woman will often experience opposite emotions. She will feel more private and calm. She also may lack energy to engage in outdoor social situations. This may lead to suicidal ideation. These observations support the result of present study.

According to Dogra T.D et al, 54.46% out of their 217 study population committed suicide in menstrual phase. Baca-Garccia E et al found increased incidence of suicidal rate during proliferative phase and more so during menstrual phase. According to Sauders and Hawton ; Caykoylu A, Capoglu I and Ozturk I; Gisselman A et al, suicide completion and suicidal attempt are more common during proliferative or follicular or preovulatory phase which is not in concurrence with the observation of present study.

Premenstrual syndrome which is characterized by anxiety, tension, irritability, mood swing, insomnia and other psychological symptoms, starts during second half of menstrual cycle, i.e, secretory or luteal phase. It lasts till the onset of menstruation or I to 2 days after onset. Symptoms worsen as the secretory phase progresses. Sometimes symptoms become very severe which is known as Premenstrual dysphoric disorder. When such symptoms combine with various social, cultural and socio-economic factors, may aggravate suicidal ideation. In this background, secretory phase may dominate proliferative phase for commission of suicide.

Though exact cause of PMS or PMDD is not known, decreased serotonin, fluctuation of estrogen and progesterone level may have some role in causation of such symptom complex. During secretory or luteal phase, this fluctuation is well noticed. During this phase progesterone level increases and it falls just before onset of menstruation whereas estrogen first falls, then rises and thereafter again falls immediately before menstruation. Lesile C Botha explained that decreased serotonin is responsible for depression. Estrogen blocks MAO which

degrades serotonin leading to elevated mood whereas progesterone increases MAO concentration leading to depression. In secretory phase, progesterone level remains high for most of the period and estrogen level fluctuates. This combined effect ultimately decreases serotonin level, and depression results. In this way vulnerability of women towards suicidal attempt in secretory phase can be explained.

On the basis of Chi-square test, associations have been found between phases of menstrual cycle with marital status of the women and age of the women (P value in both the cases were bellow 0.05) whereas no such association was found between phases of menstrual cycle with other parameters of the study.

V. Summary& Conclusion

1. During the period Jan to middle of Nov in 2017, out of total number of medico legal autopsies (i.e., 2596) conducted inN.R.S.M.C&H police morgue, 91 cases of suicidal deaths among women within their reproductive age group (15 to 45 years) were elected depending upon the study design and with due consideration to the inclusion and exclusion criteria.
2. Burn was the commonest manner of suicidal attempt (50) followed by poisoning (25) and hanging (16).
3. 58 women committed suicide between 6am to 6pm and 33 women between 6pm to 6am.
4. Hindu women (68) were more involved in suicide commission than Muslim women (33).
5. Suicide occurred more commonly in married women (62) than in unmarried women (29).
6. Highest number of cases were seen in 18 to 30 years of age (53) followed by 30 to 45 years of age (29), and 15 to 18 years of age (9).
7. Women committed suicide most commonly in Late secretory phase (41); then in Proliferative phase (21), Early secretory phase (17) and menstrual phase (12) subsequently.

From this study, it is evident that women within the jurisdiction of N.R.S.M.C.&H police morgue, committed suicide more frequently in late secretory phase of their menstrual cycle. So many studies have taken place regarding suicidal attempt and phase of menstrual cycle till now. Most of them were by hormonal analysis. Very few were by histological analysis. Histology confirms phase of menstrual cycle when suicidal attempt occurs. Previous studies on the same aspect revealed different views. Some were in favour of proliferative phase, some favored secretory phase and some could not establish any relationship.

Present study establishes a positive relationship between suicidal attempt and secretory phase, particularly late secretory one. Definite biological explanation is till now a mystery. As an epidemiological study, it has just highlighted the relationships between different parameters in a particular area. On the basis of Chi-square test, associations have also been noticed between phase of menstrual cycle with marital status and age of individual. All the relations established from this study, need further researches to find out any hormonal or other biological variations in young adult married women (within 30 years of age) and in different period of day and night hours on the background of various phases of menstrual cycle which increase depression and mood swing, leading to increased incidence of suicidal attempt.

Though some socio-economic factors were included in this study as parameters, few were absent like occupation, educational status etc.Here lie the limitations of this study.

As suicide is becoming a leading manner of death in India at present particularly among women, aim of medical science should be to bring forward some suggestions to reduce the incidence. Prevention is better than cure to achieve the goal. Prevention can be done by following means

1. Education about suicide including risk factors, warning signs and the availability of help.
2. Reducing access to convenient means of suicide.
3. Measures like psychosocial, psycho-educational group therapy.
4. Counseling of vulnerable group of women.
5. Reduction of domestic violence and substance abuse are long term strategies to reduce many mentalhealth problems.

If these measures can be taken at the time when women remain more vulnerable to attempt suicide (secretory phase, according to present observation), the incidence can be reduced to some extent. In this way, this present study may help the women having suicidal tendency and serve the society.

References

[1]. Langhinrichsen J. A Gender Analysis of Sex Differences in Suicide-Related Behavior: A National (US) and International perspective [document on internet]. University of South Alabama cited sep 28, 2012]. Available fromhttp://www.who.int
[2]. Ahuja N, Vyas JN. Textbook of Postgraduate Psychiatry. 2nd ed.vol 1.Jaypee; 2008.534.
[3]. Mukherjee.J.B. Forensic Medicine and Toxicology. 3rd ed.Academic; 2010.328
[4]. Karmakar R.N. Forensic Medicine and Toxicology. 3rd ed.Academic; 2011. 403
[5]. Losos, Jonathan B.; Raven, Peter H.; Johnson, George B., Singer,Susan R. (2002). Biology. New York: McGraw-Hill. 1207-09

[6]. Endocrinology of Menstrual Cycle [document on internet]. Available from http://www.sprojects.mmi.mcgill.ca/ menstrualcycle/ endocrinology.html [cited on Sep 28, 2012]
[7]. Menstrual cycle [document on internet]. Available from http://www.en.wikipedia.org [cited Sep 28, 2012]
[8]. Jonathan S. Berek. Berek and Novak's Gynecology, 15th ed, Walters Kluwer India Pvt Ltd. 148 – 151
[9]. Endometrial cycle histology [document on internet] Mar 2012. Available from http:// www.ganfyd.org [cited on 28 Sep, 2012]
[10]. Slomianka L. Blue Histology — Female Reproductive System [document on internet]. School of Anatomy and Human Biology — The University of Western Australia. Aug 2009. Available from http://www.lab.anhb.uwa.edu.au [cited on 28 Sep, 2012]

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