



Psychiatry & Behavioral Science - 2017

I30 The Phenomenon of Suicide by Hanging in Ferrara (1996-2016)

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After attending this presentation, attendees will better understand the evolution of suicide by hanging in Ferrara and the nearby countryside from January 1996 through July 2016.

This presentation will impact the forensic science community by reporting: (1) the evolution of suicidal hanging in Ferrara between January 1996 and July 2016; (2) the incidence of the classic signs of asphyxia; and, (3) the possible correlation between this type of acute violent mechanical asphyxia with individual variables, such as age, housing status, and employment status of the victim, as well as personal, social, and economic changes in the subject's life and the presence of ethanol in the body. The analysis of the seasonal rate of suicides by hanging will also be presented.

The information was extracted from the database of the Institute of Legal Medicine of Ferrara and includes gender, age, employment status of the victim, location of the hanging (city or countryside, closed or open spaces), position of the hanging mark (typical or atypical hanging), presence of the classic signs of asphyxia (petechial hemorrhages, congestion, and edema), signs of pressure on the neck (bruises in the neck muscles, injuries to the hyoid bone or to the larynx), Simon's bleeding, and Amussat's sign.

Between January 1996 and July 2016, 3,521 autopsies were performed at the Institute of Legal Medicine of Ferrara and 317 of these were cases of suicide by hanging. This represents the most frequently used suicide method (60% of suicides). The incidence is higher in males more than 50 years of age and there is a prevalence of unemployed subjects.

This study found an increase in suicides by hanging in the summer and spring and an increase in suicides has been seen in 2001, 2002, and 2013; 99% of suicides by hanging occurred at home or in a nearby business establishment. The incidence of suicides in the countryside is 60%, likely because the population in the countryside is higher than that in the city.

The unusual position of the hanging mark (atypical hanging) has been seen in 75% of the cases. Since only 5% of the cases received a medicolegal examination at the scene, in 95% of the suicides by hanging it was not possible to determine if there was total suspension. Petechial hemorrhages in the skin or conjunctivae and under thoracic serous membrane (such as the pleura or pericardium) were described in 55% of the cases and a transverse laceration of the intimal layer of carotid arteries (Amussat's sign) was described in 22% of the autopsies. Injuries



Psychiatry & Behavioral Science - 2017

in the neck muscles or injuries to the hyoid bone or to the larynx were identified in only 17% of the cases. Simon's bleeding is extremely rare, described in only 1% of internal examinations. Since 2011, this study has collected the toxicological analyses of 77 cases of suicide by hanging and, in 16 cases, ethanol was present in the body; in ten cases, the concentration was $>1.0\text{g/L}$.

This study demonstrates that hanging is the most common form of suicide in Ferrara. This finding agrees with many studies in different countries. Suicide by hanging is probably so common because the required materials are easily available and the method does not require complicated procedures. Many studies have shown a spike in the number of suicides in the spring and during holidays, while this study's analysis revealed an increase in suicide by hanging during the summer and spring.

This study emphasizes the importance of conducting histological investigations on tissues of the neck, because the classical macroscopic signs of hanging are inconsistent. More data would be helpful in further assessing the relationship between consumption of alcohol and attempting suicide by hanging.

Suicide, Suicidal Hanging, Asphyxia