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Review: Autoerotic Asphyxiation in the United States

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ABSTRACT: The purpose of this article is to define autoerotic asphyxia and present the enigma as a preventable problem. Articles published between 1856 and 1994 are identified through medline, referenced citations, and expert opinion. The literature selected were those most often cited and for which the methodological assumptions could be identified. Interventional strategies determined included legislation/regulation, technology, and education. Injury and death from autoerotic asphyxia can be controlled by pre-event, event, and post-event phase control. However, there are formidable barriers in the way.

KEYWORDS: pathology and biology, autoerotic asphyxia, asphyxiophilia

According to McGinnes, one of the most prominent contributors to mortality in the United States in 1990 was sexual behavior, accounting for 30,000 deaths [*1*]. These deaths illustrated in Table 1 were attributed to unprotected intercourse such that approximately 5000 from excess infant mortality rates among those whose pregnancies were unintended [2], 4000 from cervical cancer [*3–5*], 1600 from sexually acquired hepatitis B infection [*6,7*], and 21,000 from sexually acquired HIV infection [*8*]. Another contributor to deaths due to sexual behavior in the United States, but not discussed in the article by McGinnes, is autoerotic asphyxia. Although autoerotic asphyxia is not a major contributor to the deaths resulting from sexual behavior, it has significant impact on the practitioner's family and friends.

Autoerotic asphyxia appears to be an enigma for the majority of the country, including emergency physicians. For the most part, only those directly in contact with a death from this practice are aware of its etiology. Most literature on this topic comes from the literature about forensic pathology. This paper will attempt to present autoerotic asphyxia as a preventable problem. Currently, there is no published literature highlighting an effective injury prevention program for autoerotic asphyxia.

A systematic approach will be annotated throughout this review as a means to develop recommendations to prevent injury and deaths from autoerotic asphyxia. Data will be presented and analyzed. Target injuries and populations will be highlighted. Intervention strategies will be determined. Finally, recommendations, as well as the individuals to implement these plans, will be identified.

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TABLE 1—*Actual causes of death in the United States in 1990.*

Causes	Deaths	
	Estimated No.	Percentage of Total Deaths
Tobacco	400,000	19
Diet/activity patterns	300,000	14
Alcohol	100,000	5
Microbial agents	90,000	4
Toxic agents	60,000	3
Firearms	35,000	2
Sexual behavior	30,000	1
Motor vehicles	25,000	1
Illicit use of drugs	20,000	<1
Total	1,060,000	50

Methods

This article summarizes published case reports and case series of asphyxiophilia as well as the attributed deaths. Published literature between 1856 and 1994 are identified through medline, referenced citations, and expert opinion. The literature selected for this paper were those most often cited and those for which the methodological assumptions could be identified. All relevant analysis were reviewed in their entirety.

Definition

Autoerotic asphyxiation is defined as a paraphilia of the sacrificial/expiratory type in which sexioerotic arousal and attainment of an orgasm depend on self-strangulation and asphyxiation up to, but not including, loss of consciousness [*9*]. Autoerotic asphyxia is also known as asphyxiophilia, sexual asphyxia, and hypoxyphilic behavior [*10,11*]. According to the DSM IIIR, autoerotic asphyxia is discussed under 302.83 "Sexual Masochism": hypoxyphilia involves sexual arousal such that the person produces oxygen deprivation by means of a noose, ligature, plastic bag, mask, chemical (often a volatile nitrite that produces temporary decrease in brain oxygenation by peripheral vasodilation), or chest compression, but allows him/herself the opportunity to escape asphyxiation prior to the loss of consciousness [*12*]. Due to equipment failures, errors in placement of the noose or ligature, or other mistakes, accidental deaths sometimes occur. At this point, there is no change in this definition for the DSM IV [*13*]. Moreover, hypoxyphilia is discussed in the *ICD-10 Classification of Mental and Behavioral Disorders* under F 65.8 "Other Disorders of Sexual Preference" as: the use of strangulation or anoxia for intensifying sexual excitement [*14*]. Estimates of the mortality rate range of autoerotic asphyxia between 250 to 1000 deaths per year in the United States [*15–17*].

Literature Review

Autoerotic asphyxia has been described in the literature as early as the 1600s. At this time, sexual asphyxiation was used as a technique to cure impotence [*18,19*]. The technique was probably discovered due to the association of priapism with execution by hanging. Other published literary works that illustrate asphyxiophilia include *Justine* [*20*], *Billy Budd* [*21*], and *Waiting for Godot* [*22*]. Modern fiction also portrays autoerotic asphyxia.

Anthropologists have described asphyxial practices in both adults and children. A frequent practice among Orientals is to strangle the throat to heighten sexual pleasure [*23*]. Likewise, the Yahgans in South America tied the neck to induce partial strangulation which produced exhilaration and at which time, they saw beautiful colors [*24*]. The Celts also utilized erotic hanging for pleasure [*20*]. Children, similarly partake in this practice. For example, the Eskimo children hang themselves in a sexual game [*18*]. Moreover, the Shoshone-Bannock Indian children play "smoke-out," "red-out," and "hang-up," which are suffocating games [*21*].

Prostitutes have been experts in sexual asphyxiation for centuries. In England, brothels were reputed to use asphyxiation to enhance their clients pleasure [*19*]. The "Hanged Men's Club," during the Victorian era in London, was where men could satisfy their sexual urges through controlled hangings [*25*]. The famous musician, Kotzwarra, died in 1791 as a result of such a request [*19*].

Medical references lag behind literary publications in the reporting of autoerotic asphyxiation. The earliest medical publication of asphyxiophilia is in 1856 by the French psychiatrist, DeBoismont. He reported 30% of the males who died by hanging had associated erections or ejaculations [*26*]. In Massachusetts, suicides were reviewed during 1941–50 and 25% were attributed to young persons without obvious motivation, accidental death, or sex hanging [*24*].

Neurophysiology

Resnik summarizes that constriction of the neck results in (1) a disruption of the arterial blood supply resulting in diminished oxygenation of the brain and (2) an increased carbon dioxide retention [*18*]. He states that both anoxia and hypercapnia heightens sensations via diminished ego controls that will be subjectively perceived as giddiness, light-headedness, and exhilaration; therefore, reinforcing masturbatory sensation. Furthermore, he alleges that ejaculatory pleasure is often accompanied by holding the breath or contracting the neck strap muscles.

Resnick also discusses the immediate consequence of bilateral pressure upon the carotid sinus causing unconsciousness secondary to neck constriction [*18*]. Experiments reveal that a pull of as little as seven pounds is sufficient to produce rapid unconsciousness within seven seconds [*27*]. The exhilaration of the cerebral hypoxia, due to the carotid artery pressure, may cause a loss of control in the practitioner, and thus, consequential suspension resulting in asphyxia, chronic brain damage, and even death.

Autoerotic asphyxiation is hypothesized as a relationship between repetitive hanging behavior and separation anxiety [*18*]. Infants experience good visceral feelings during feeding and they often become hypoxic because they do not want to let go of the mother's nipple. Male infants frequently develop erections while feeding, thus the relative sense of well-being derived from feeding becomes associated with asphyxia and erection. These reflex erections accompany the sense of well-being associated with feeding and become unconsciously aligned with a separation-strangle conflict. The infant experiences the conflict between separating from the breast to breathe versus strangling to feed. This cycle is reinforced through incorrect breast-feeding for as long as three years in some children.

Limitations

There are several limitations in the data concerning autoerotic asphyxiation that must be discussed. First, it is difficult to ascertain the number of practitioners of asphyxiophilia due to the social stigma, lack of professional awareness, and few practitioners' recorded experiences. Second, the statistics available in the literature are inconsistent [*18,24,28–31*]. Third, there is no specific category in the ICD codes for deaths by sexual asphyxiation, hence, these deaths may be misclassified as accidents, suicides, or homicides. As a result, there is probably an underestimation of the rates of death by sexual asphyxiation. Fourth, relatives often hide the evidence of asphyxiophilic deaths due to the negative societal perception which further causes misclassification. Fifth, medical examiners, coroners, forensic pathologists, emergency physicians, and law enforcement officials lack consensus for categorizing these deaths. Finally, homicides can be disguised as an autoerotic death by a sophisticated murderer [*30,32*].

In 1978, Hazelwood studied 157 suspected cases of autoerotic fatalities. His collection of cases represents the largest collection of thoroughly investigated cases anywhere and reflects no demonstratable sampling bias [*15*]. However, he states that the cases submitted reflect a few reporting biases that limit the sample collected. First, only the fatal cases come to the attention of the investigators are reported; therefore, the fatal cases that the family or friends concealed are never reported as autoerotic deaths. Second, another cause of underrepresentation of the cases is the lack of interest in the extensive investigation process of autoerotic fatalities in urban areas where theses deaths are common-place. Hazelwood states that a third reporting bias is due to the overrepresentation of difficult cases or equivocal cases. His fourth reporting bias is that the more bizarre and complex cases have a higher probability of submission compared to the more typical cases. And fifth, he states that family members camouflage the deaths to appear as suicides.

Results

According to Boglioli, the four basic methods of inducing asphyxia include neck compression, oxygen exclusion, airway obstruction, and chest compression [*33*]. These four methods of inducing asphyxia and subsequent death occur through a variety of mechanisms. The most common is a noose around the neck [*15,34–38*]. In the vast majority of the victims a ligature or complex device producing asphyxia is constructed, however, these devices are always arranged to be escapable. Unfortunately, the practitioner can lose control during orgasm and become unconscious due to lack of oxygen. Consequently, no matter how clever the escape mechanism, when the practitioner becomes unconscious s/he will die of asphyxia unless someone rescues them first.

Mechanisms include a ligature around the thorax [*38,39*], a ligature around the abdomen [*15,40*], plastic bags [*15,41–43*], the passage of electric current through the body [*36,44,45*], inhalation of aerosol propellants and chemicals [*15,46*], partial or total submersion [*47*], nitrites [*43,48*], gasoline [*49*], wet suit [*50*], vacuum cleaner [*51*], power hydraulics [*52*], and automobile [*53*]. Obviously, most literature is derived from fatal cases. However, some

TABLE 2—*Final classification of 157 suspected autoerotic fatalities.*

Classification	N	(%)
Asphyxial autoerotic fatality	132	(84.1)
Atypical autoerotic fatality	18	(11.5)
Sexual-asphyxial fatality involving a partner	5	(3.2)
Autoerotic suicide	2	(1.3)
Total	157	(100.1)

reports are published on living practitioners of asphyxiophilia [*30,54–59*].

According to Hazelwood, of all the recognized forms of autoerotic risk-taking, none result in death more frequently than autoerotic asphyxia [*15*]. See Table 2. For example, the data abstracted from the 157 suspected autoerotic fatalities was analyzed and the results reveal that 132 of the cases were classified as asphyxial autoerotic deaths, 18 as atypical autoerotic deaths (mostly non-asphyxial), 5 as sexual asphyxia involving a partner, and 2 as autoerotic suicides [*15*].

The incidence of death due to autoerotic asphyxiation is increasing. For example, in the US in 1979, 250 cases were reported [*17*]. In 1983, 500 to 1000 cases were reported in the US representing a two-to-four increase [*15*]. The most common age group is 12 to 25 years which account for the majority of the cases [*37,59*]. Hazelwood's study revealed the mean age of deceased to be 26.5 years and 71% of the victims were less than 30 years old [*15*]. See Table 3.

Even though autoerotic asphyxia is predominantly a male phenomenon, female cases have been reported [*15,23,34,60–62*]. For example, Hazelwood's study shows that of the 132 victims only 5 were female [*15*]. See Table 3.

The incidence of autoerotic asphyxia demonstrates particular characteristics. These specific features must be present, whether male or female, before a diagnosis of autoerotic death can be made [*10,17,18*]. For example, the autoerotic death scene reveals many key characteristics that hint of an accidental death. These features are not found in every case; but they should suggest to the investigator that the fatality may be autoerotic in nature versus a suicide or homicide. Hazelwood discusses 12 characteristics of the autoerotic death scene which include [*15*] (1) **location**—a secluded or isolated location such as a locked room, attic, basement, garage, workshop, motel room, places of employment during non-business hours, wooded areas, and summer residences; (2) **victim position**—most commonly the victim's body is partially supported by the ground such that s/he is suspended upright with only the feet touching the surface; (3) **injurious agent**—most common was a ligature compressing the neck; (4) **self-rescue mechanism**—any provision that the victim has made to reduce or remove the effects of the injurious agent such as a slip knot or knife for a ligature; (5) **bondage**—refers to the use of physically restraining materials or devices that have sexual significance for the user (this characteristic is often responsible for the misinterpretation of these deaths as homicidal versus accidental); (6) **sexual masochistic behavior**—the deceased sometimes inflicts pain upon his/her genitals, nipples, or other body parts; (7) **attire**—the victim is occasionally dressed in one or more articles of female clothing (the family often alters the scene due to shame, embarrassment or impulse); (8) **protective padding**—the victim is found with soft material between the ligature and adjacent body part to prevent abrasions and bruising; (9) **sexual paraphernalia**—vibrators, dildos, and fetish items such as female garments, leather, and rubber items are found on or near the victim; (10) **props**—items such as mirrors, commercial erotica, photographs, and films; (11) **masturbatory activity**—the deceased may or may not engage in manual masturbation during the fatal autoerotic activity and the presence of seminal fluid is not a useful clue in determining whether death is due to autoerotic misadventure; (12) **evidence of previous experience**—elicited from relatives and associates, permanently affixed protective padding, suspension-point abrasions, complexity of injurious agent and collected materials.

Resnik describes asphyxiophilia as the "eroticized repetitive hanging syndrome" having the following components: [*18*] (a) adolescent male or young adult male; (b) ropes, belts, or other binding material so arranged that compression of the neck may be produced and controlled voluntarily; (c) evidence of masturbation (such as, semen); (d) partial or complete nudity; (e) solitary victim; (f) repetitive behavior that the deceased had tried to ensure would leave no visible mark on his person; (g) no apparent wish to die; (i) body and/or the extremities and/or the genitals is bound with ropes, chains, or leather; and (j) presence of female attire.

Some other common features in both male and female, yet not essential to the diagnosis, include: a secluded location for performance of the activity (such as, isolated areas outdoors or in rooms locked from the inside), evidence of repetitive behavior (such as, worn ropes or overhead beams), and padding of neck ligatures to prevent subsequently detectable rope burns or bruises [*10,15,17,18,31,34,37,63*].

There are some features that differ between male and female cases of autoerotic asphyxial death. See Table 4 [*64*]. For example, males frequently rely on pornographic pictures, use complex bindings to cause real or simulated pain, use elaborate devices, and wear unusual attire. All of which are rare in females. Furthermore, females do not exhibit fetishism or use bizarre props. A summary of the features of autoerotic asphyxia are illustrated in Table 5 [*65*].

TABLE 3—*Age of decedents by type of fatality and sex.*

	Asphyxial autoerotic (N = 132)		Atypical autoerotic (N = 18)	
Age group	Male	Female	Male	Female
9–12	4	0	1	0
13–19	37	0	2	0
20–29	42	4	2	2
30–39	28	0	4	0
40–49	8	0	1	0
50–59	6	0	1	0
60–69	1	1	3	0
70–79	1	0	2	0
Total	127	5	16	2

TABLE 4—*Features of male and female cases of autoerotic asphyxial death.*

	Males	Females
Age range	9–80 years	19–68 years
Incidence	>1000/year	<20/year
Pornography	yes	rare
Unusual attire	yes	rare
Devices used to cause real or simulated pain	yes	rare
Bizarre props	yes	no
Fetishism	yes	no

TABLE 5—*Summary of the features of female autoerotic asphyxia.*

Case #	Age	Initial body position	Ligatures	Evidence of sexual activity	Neck padding	Failed self-rescue mechanism	Extra props and aids	Assessment
Fatal outcome								
1.	22	Kneeling in basement, clothed	Sweater around neck tied to rope over rafter	Intravaginal shampoo container	Yes	Yes	No	Accident
2.	45	Beside bed, nude	Electric cord around neck tied to wrists	No	Yes	Yes	No	Accident
3.	21	Kneeling in bed, nude	Bathrobe sash around neck tied to ceiling hook	Equivocal	No	Yes	No	Accident with partner
4.	23	Prone, seminude	Electric cord around neck, over door-knob, wrapped around ankles.	Vibrator	No	Yes	No	Homicide
5.	19	Prone, in bedroom, nude	Rope around neck tied to ankles	Intravaginal hairbrush	No	Yes	No	Accident
6.	35	Prone, in closet, nude	Stocking around neck tied to wall	Vibrator	Yes	Yes	Clothes peg left nipple	Accident
Near-fatal outcome								
7.	20	Hanging	Rope around neck	Patient's subsequent explanation	No	Yes	No	Suicide attempt
Fatal outcome (atypical cases)								
8.	23	On bathroom floor, nude	Rope around neck to wrists	Iron bolt beneath buttucks	No	No	No	Homicide
9.	19	Suspended from closet door in bedroom	Rope around neck tied to door	Rope between legs, around breasts	No	Yes	"Harem outfit," blindfold, gag, pictures	Accident

Rosenblum and Faber collected and reviewed data on reports of adolescent survivors [*17*]. See Table 6. This data is fairly consistent with the post-mortem data collected. See Table 7. This valuable data helps provide insight into adolescent autoerotic asphyxia.

Adolescent victims are described in the literature as otherwise well-adjusted, high achievers, who are not perceived as depressed or suicidal by family or friends. Table 6 shows a slight discrepancy to this description; however, Rosenblum hypothesizes that the data in Table 6 could be due to the fact that the few adolescent survivors who have been interviewed are not representative of the population, but are a more pathologic subset [*17*].

Adolescence is a time of risk taking and experiencing the unfamiliar. For example, often male adolescents experiment with homosexual behavior and this does not mean that these teens are gay, rather they are "thrill-seeking." In the same manner, the majority of adolescents who try sexual asphyxia do so just for the experience. According to Rosenblum, the risks of sexual asphyxia are not well known and it could therefore be viewed as no more pathological

TABLE 6—*Common characteristics of living cases.*

Characteristics	Rosenblum and Faber	Herman	Edmondson	Shankel and Carr [*76*]
Male	+	+	+	+
Adolescent	+	+	+	+
Caucasian	+	+	+	+
Hanging from low height	+	+	+	+
No suicide evidence	+	+	+	+
Sexually explicit material present	+		+	+
Transvestism	+		+	+
Binding of the body	+		+	+
Heterosexual background	+	Too young	+	+
Significant depression	+	+		
Academic problems	+		+	
Preoccupation with ropes and chains as a child	+	+		
Parents have unhappy marriages	+			+
Dominant mother	+			+
Punitive mother	+			+
Mother reinforces the behavior	+	+		+
Rejecting father	+			+
Physically ill father	+		+	+

TABLE 7—*Common features of the scene of death.*

1. The absence of a suicide note.
2. The victim is either totally or partially naked and/or his genital organs are prominently exposed.
3. He may be partially dressed in women's underclothing.
4. Ropes, belts, or other bindings are arranged so that compression of the neck could have been produced voluntarily.
5. A scarf or towel has been placed around the neck, under the rope to protect against rope burns.
6. The body, extremities, and/or genitals are bound with ropes, chains, or leather.
7. Pornographic material (especially pictures) is present nearby.
8. Evidence of masturbation (semen) is apparent.
9. There is evidence that this is repetitive behavior (for example, a permanently installed bar, grooves, on a rafter, or other apparatus).
10. The victim is found suspended by the neck, with his feet on the floor, while sitting in a chair, or lying in a bed.
11. The act appears to have been performed alone, usually behind locked doors or when privacy was assured.

than driving a car or motorcycle at high speeds [17]. These types of high risk behaviors are prevalent among adolescents today.

Asphyxiophilia cases have been reported to range from 9 years to 80 years [26,55,64,75]. Adolescent practitioners differ in two important aspects than their adult counterparts. First, adult practitioners tend to be depressed and often suicidal unlike adolescent practitioners [30]. Adults are aware of the death orientation of the practice and they are not just experimenting with their sexuality. For example, sexual asphyxia has been named "terminal sex" in the adult bondage community [17]. Second, adolescents tend to experiment alone and are heterosexual. On the other hand, adults often practice sexual asphyxia in pairs and are primarily homosexual in orientation [17]. Clearly, the "sole-practitioner" in the adolescent population is at high risk for accidental death due to the lack of supervision by a sex partner.

Suggested Interventional Strategies

Suggestions in the literature were compiled into three groupings as possible interventional strategies. These three groupings include: legislation/regulation, technology, and education. The author noted that there were very few interventional strategies published. This lack of attention may be due to the lack of opportunity to intervene clinically.

Legislation/Regulation

To establish autoerotic death as an accidental cause to facilitate the settling of insurance claims [66–68] to regulate that television is not a suitable medium for discussion of autoerotic asphyxiation [69].

Technology

To treat asphyxiophilia with lithium carbonate [70] or Depo-Provera [9,52] in combination with psychotherapy; to treat recalcitrant cases with amyl nitrite which produces similar sensations with much less risk [71].

Education

To educate and recommend to parents that hanging experiments should be discouraged;[30] to further publicity on the dangerous consequences for adolescents of erotic practices.[30]

Discussion

Injury and death from autoerotic asphyxia can be controlled by: (1) preventing events that might result in injury (pre-event phase control); (2) minimizing or preventing injury should an event with injury producing potential occur (event phase control); and (3) decreasing the likelihood of death or permanent damage should an injury occur (post-event phase control) [72]. These three phases are exemplified by applying this construct to autoerotic asphyxia.

The pre-hung phase includes everything that determines whether a practitioner will hang him/herself. The hung phase includes everything that determines whether an injury or death results from the hanging. The post-hung phase determines whether the severity of the injury's consequences can be reduced.

A Haddon matrix illustrates this application in Table 8 [73]. The three phases are divided into four factors: human, agent, physical environment, and sociocultural environment. Each phase and its subdivision will be briefly discussed for clarification.

The pre-hung human factors consist of type of clothing (such as, bulkiness vs. nakedness), type of footwear (such as, men's flat soled shoes vs. women's pumps), visual acuity (such as, does the practitioner have his/her glasses or contacts on while setting up the apparatus), experience and judgment, speed and accuracy of setup, clothing weight, fatigue, impairment (such as, intoxicated with alcohol or drugs), and attention to escape route. The pre-hung agent factors include whether there is an escape mechanism, padding on the rope, center of gravity (such as, balanced vs. nonbalanced apparatus), energy transfer, ease of control of airway, load weight and noose placement. The pre-hung physical environment deals with access to asphyxial materials (such as, plastic bag vs. nitrites), location (such as, isolated vs. people in the vicinity), and visibility (such as, daytime vs. nighttime). The pre-hung sociocultural environment includes the attitudes about the severity of the problem, community support for injury prevention, sexuality education for adolescents, parental supervision and sexual partner awareness.

The human factors in the hung phase are the size of the practitioner (such as, large vs. small build), knowledge of how to hang, clothing weight, preexisting disease (such as, osteoporosis), athleticism, and genetic makeup. The agents during the hung phase are equipment malfunction; placement, hardness, and sharpness of contact surfaces; load containment; failure of escape mechanism; and speed/height of impact. The physical environment hung phase includes stability of the apparatus, isolated location, consistency of the ground (such as, concrete vs sand), and level of ground. The sociocultural environment of the hung phase consists of awareness of the sexual partner to the possible consequences and ability to intervene.

The human factors in the post-hung phase are the age, physical condition, and recuperative power (such as, the practitioner has diabetes, a bleeding dyscrasia, or a respiratory disorder). The agents for the post-hung phase include the height off the floor and other energy transferring properties; thus resulting in different possible injuries. The physical environment for the post-hung phase would include the emergency communication system, the distance to emergency care, the quality of emergency medical services and the availability of rehabilitation programs. The sociocultural environment for the post-hung phase consists of support for trauma care systems; medico-legal ramifications (such as, insurance coverage vs non- coverage); training of emergency medical personnel, police, coroners, and forensic pathologists; and parents, friends, and lovers' knowledge of first aid.

Recommendations

The following recommendations represent an application of autoerotic asphyxia to the priority recommendations given for falls by the Third National Injury Control Conference [74]. A combination of these recommendations would be the best implementation plan for decreasing the number of injuries and death due to autoerotic asphyxiation. These recommendations for autoerotic asphyxia represent possible preventive strategies. The strategies can be applied to the entire US population, yet, they would probably be more effective if the focus is on adolescents. The author bases this assumption on the data that suggests that the majority of the adolescent population who "experiments" with autoerotic asphyxia

TABLE 8—*Haddon matrix.*

		Factors			
		Human Factors	Agent or Vehicle	Physical Environment	Sociocultural Environment
	Pre-event	• Type of clothing • Type of footwear • Visual acuity • Experience & judgment • Speed & accuracy of setup • Weight of clothing • Fatigue • Impairment • Attention to escape route	• Escape mechanism • Padding on rope • Center of gravity • Energy transfer • Control of airway • Load weight • Noose placement	• Access to asphyxial materials • Visibility • Location	• Attitudes about the severity of the problem • Community support for injury prevention • Sexuality education for adolescents • Parental supervision • Sexual partner awareness
P H A S E	Event	• Size of the practitioner • Knowledge of how to hang • Clothing weight • Preexisting disease • Athleticism • Genetic makeup	• Placement, hardness, and sharpness of contact surfaces • Load containment • Equipment malfunction • Failure of escape mechanism • Speed/height of impact	• Stability of the apparatus • Consistency of the ground • Isolated location • Level of the ground	• Awareness of sexual partner
	Post-event	• Age • Physical condition • Recuperative power	• Height off the floor • Other energy transferring properties	• Emergency communication system • Distance to emergency care • Quality of emergency care • Available rehabilitation	• Support of trauma care systems • Training of emergency medical personnel, police, coroners and forensic pathologists • Parents, friends, and lovers' knowledge of first aid • Medico-legal ramifications

is healthy versus pathological, therefore, injury and premature death are unexpected and accidental. The main implementation bodies of these recommendations are highlighted.

Federal Government

• Support epidemiologic surveillance of autoerotic asphyxia to identify circumstances and diagnostic risk factors of these injuries and deaths.

• Include autoerotic asphyxia in the National Electronic Injury Surveillance System (NEISS).

• Support analytic studies of major contributors of autoerotic asphyxia, including biomedical, behavioral, and environmental risk factors for injuries and interaction of these risk factors with age.

• Fund local injury prevention workers and act on the results of surveillance and analytic studies.

• Develop and disseminate prevention programs.

• Increase support of clinical trials to test strategies for injury reduction and rehabilitation.

State and Local Governments

• Conduct surveillance of circumstances and specific locations of autoerotic asphyxial injuries/deaths.

• Develop E-codes specific for autoerotic asphyxiation.

• Enforce age minimum to purchase pornographic material.

• Include autoerotic asphyxial practices in the sex education in schools.

• Discourage TV producers from using TV as a medium for discussing and/or glamorizing autoerotic asphyxiation.

• Educate police, coroners, forensic pathologists, and medical practioners about autoerotic asphyxiation and the need for accurate reporting regardless of the social stigma.

• Educate the clergy on autoerotic asphyxia to help families of the practitioners to cope and decrease the guilt associated with death and disability.

• Share the observations of the different disciplines encountering autoerotic death and develop a systematic method of interacting with each other.

Private Organizations

• Educate pharmacists and industrial suppliers of the risks of nitrous oxide.

• Limit the distribution of nitrous oxide in large quantities to noncommercial individuals.

• Encourage medical and mental health professionals to increase clinical counseling and identification of autoerotic asphyxia.

• Enforce businesses not to serve alcohol to underage or intoxicated patrons.

• Enforce E-code utilization by hospital emergency room personnel.

• Develop support/focus groups for adolescents concerning sexuality and autoerotic asphyxia.

• Develop anonymous hot lines on sexuality, especially for adolescents.

• Develop a support network for surviving parents that would distribute accurate information on autoerotic asphyxia.

Academic and Research Institutions

• Conduct analytic studies (including risk factors for autoerotic asphyxiation) listed under "federal government" above.

• Conduct clinical trials to test strategies for hanging injury prevention and rehabilitation.

• Develop and evaluate innovative interventions.

• Educate clinicians so parents and patients can be cautioned.

• Conduct clinical studies of patients who have engaged in such behavior.

- Educate medical students, residents, and nurses that choking sets free in certain individuals feelings of pleasure, erections, and orgasm.
- Teach mothers of newborns how to feed their babies properly to avoid asphyxiation and the hypothesized strangulation cycle.
- Provide follow-up care for individual and families to prevent further autoerotic experimentation.
- Use literary works (such as *Waiting for Godot*) that are currently read in the school curriculum as tool to discuss sexuality such as autoerotic asphyxia.
- Study further the medications for treatment options for autoerotic asphyxia such as lithium carbonate, Depo-Provera, and amyl nitrite.
- Educate psychiatrists and other physicians about such drugs and their possible usage.

Conclusions

Autoerotic asphyxia can be a devastating problem for practitioners, especially for adolescents, their partners, families, and friends. From a public-health perspective, most concerning is the prevalence of male adolescent practitioners of autoerotic asphyxia who experience a needless lifelong injury or die a premature death. Ideally, we should strive to prevent such tragedies, however, there are foreboding barriers in the way. These practitioners are extremely difficult, if not impossible, to identify. Adolescent practitioners do not want to die and often do not expect an accident to result from their behavior. Clearly, this population is highly unlikely to visit a clinician for treatment or prevention. Compounding the problem, adolescents live for the present and do not see the future consequences of their actions. These teens developmentally feel that they are omnipotent and immune to death regardless of their actions.

Since autoerotic asphyxia only represents a minute fraction of the deaths due to high risk sexual behavior it will not be prioritized highly in this era of limited resources. Furthermore, the data is inconsistent, difficult to quantify, time consuming to collect, and costly. Currently, there is a tremendous lack of awareness and enormous room for policy changes concerning the problem of autoerotic asphyxia. Nonetheless, even if the recommendations are carried through, there is still a question of their effectiveness. Is this just an esoteric public health issue for academia or is it something that can be prevented and/or treated?

Since there are limited resources available, the recommendations will be prioritized. The prioritization is based on cost-efficiency, ease of implementation, and acceptability. The following recommendations have been ranked as the highest priorities based on this criteria. Education appears to be the number one priority. This education should be of the disciplines possibly encountering autoerotic asphyxia, including emergency medicine physicians. Next, these disciplines should be encouraged to increase their identification, reporting, and counseling of practitioners, families, friends, and lovers faced with autoerotic asphyxia. Finally, surveillance of the circumstances, risk factors, and prevention strategies should be conducted.

Until there is an increased awareness and energy invested into these recommendations, the community will never know the answer to whether or not the recommendations are effective. The morbidity and mortality rates for autoerotic asphyxia will continue to increase as a result of a lack of attention to these recommendations. Subsequently, the increase in premature death and disability will continue to go undetected and be misclassified.

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