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# *Prevalence of Suicide Attempts in a Deaf Population with Co-Occurring Substance Use Disorder*

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## **Abstract**

The Deaf Off Drugs & Alcohol (DODA) Program provides culturally appropriate recovery services via e-therapy to Deaf and hard of hearing (HH) individuals with substance use disorder (SUD). In the first three years DODA was providing services, 149 consumers (107 Deaf, 42 HH) received treatment. A retrospective secondary data analysis sought to examine the lifetime prevalence of suicidal behavior in Deaf individuals receiving alcohol and drug treatment services from the DODA program. The prevalence of self-reported lifetime suicide attempts in the Deaf sample was 42.1%, higher than rates reported for other subgroups with coexisting conditions. Suicidal ideation was reported by 50.5% of Deaf consumers and by 65.1% of Deaf women. Variables significantly associated with suicide attempts included past mental health diagnosis. Possible explanations and future study are discussed.

*Keywords: suicide, substance use disorder, mental illness*

Persons who are deaf may encounter a multitude of obstacles as they attempt to gain knowledge of the world around them. These obstacles include language barriers with parents and teachers, public misconceptions and stigma regarding deafness, and information deficits due to a scarcity of accessible information available in visual form during early development (Guthmann & Moore, 2007). These issues are sometimes compounded by delayed exposure to language and cultural misunderstandings in part due to language differences. Some research has suggested that a large proportion of deaf individuals using sign language fall into nonfluent ranges (Black & Glickman, 2006). A percentage of deaf individuals live in a world that may have had an absence of language, perhaps for years, and may continue to experience communication difficulties throughout their lives (Pinker, 1994). If language and therefore cultural acquisition is delayed though major developmental milestones of childhood, deaf individuals may have less access to the tools necessary to build social support and positive social identity.

A person who is first exposed to language and communication at a later point in life may experience emotional ramifications of their childhood isolation. Although research on suicidal behavior among deaf individuals is scarce (Turner, Windfuhr, & Kapur, 2007) , the lifetime prevalence rate

of suicide attempts in individuals with physical or mental disabilities and substance use disorder is reported to range from 15 - 45% (Bakken & Vaglum, 2007; Howard et al., 2010; Johnsson & Fridell, 1998; O'Boyle & Brandon, 1998; Preuss, Koller, Barnow, Eikmeier, & Soyka, 2006; Russell, Turner, & Joiner, 2009). In contrast, lifetime prevalence rates for suicide attempts for the general population are much lower, ranging from 1.1 - 4.6% (Kessler, Borges, & Walters, 1999; Moscicki, 2001; Nock & Kessler, 2006). The present study examined the prevalence rate of prior suicide attempts among consumers in the Deaf Off Drugs & Alcohol (DODA) program, an e-therapy treatment program for substance use disorder (SUD) for deaf individuals.

Obtaining data on suicide attempts is problematic for any population studied due to a lack of primary data sources. Whereas suicide data are typically obtained from death certificates, data on suicide attempts come largely from self-reports (Moscicki, 2001). Self-reports can be accurate, or they can reflect willful or innocent deception. Plöderl and colleagues (2011) have differentiated among bona fide suicide attempts, false positives (near fatal incidents where there was no intent to die), and false negatives (suicide attempts that are not reported). False positives will inflate the reported prevalence of suicide attempts, and false negatives will reduce it. Similarly, Nock and Kessler (2006) distinguished between two types of self-injurers, those who intended to die (suicide attempters) and those who did not intend to die but wanted to communicate with others (suicide gesturers). Thus, *intent to die* is an important criterion to use when identifying those who attempted suicide (Nock & Kessler, 2006).

In the present study, data were collected for both suicide attempts and suicide ideation. Regarding suicide attempts, participants were directly questioned about intent to die, in order to eliminate false positives. Asking about intent to die is accomplished more directly in American Sign Language (ASL) than in English, given the nature of ASL. The question "*Have you attempted suicide in the past?*" was signed in ASL as:

Q  
 \_\_\_\_\_  
 YOU-PAST- FINISH -TRY -KILL- SELF?

YOU- KNOW- LIKE- CUT -WRIST -HANG -SHOOT-

Q  
 \_\_\_\_\_  
 UNDERSTAND -YOU?

Suicide ideation may reflect intent to die, or it may reflect a desire to communicate, as suicide ideation can involve fantasizing about making an unsuccessful attempt that is discovered. The question “*Do you ever think about harming or killing yourself?*” was signed in ASL as:

**YOU-NEVER-TRY-KILL-SELF-BUT-**

**Q**

**SOMETIMES-THINK-HURT-KILL-SELF-YOU?**

Suicide ideation does predict suicide attempts, but it is not a significant predictor of suicide (Gliatto & Rai, 1999). In the present study, participants were questioned about suicide ideation to obtain a measure of likelihood to make a suicide attempt.

There are significant gaps in our understanding of suicide and deafness. What research exists tends to be characterized by small, unrepresentative samples. This may be the result of the low incidence and geographic distribution of persons who are deaf. Moreover, persons who have profound hearing loss are not a homogeneous group, and the costs of such research may be prohibitive (Connolly, Rose, & Austen, 2006; Turner et al., 2007). For example, the etiology and onset of deafness is most often associated with either aging or a disease process; however, the individuals considered in the present study were prelingually deaf. There is even less research on suicidal behavior in the deaf community, in the form of ideation and attempts, despite the fact that attempts are 8-10 times more common than suicides (Lester, 1989).

The present study sought to examine the lifetime prevalence of suicide attempts in deaf individuals receiving alcohol and drug treatment services from the Deaf Off Drugs & Alcohol program (DODA) operated through a specialized program based at a university in the Midwest and serving consumers across Ohio.

## **Method**

### *Participants*

The participants were 107 deaf individuals engaged in SUD treatment with the DODA program, and were either self-referred or referred from community service agencies. The data were collected at intake into the DODA program, where Deaf individuals were clinically diagnosed with a SUD and connected with cessation and recovery support programs via a

telemedicine program. Participants were from several different Midwestern states, but the majority (82.2%) were residents of Ohio. The reasons for this wide geographic distribution include a very low incidence of individuals who are deaf per geographic region and an even lower incidence of deaf individuals with a co-occurring SUD.

Although the DODA program served 149 consumers in the first five years of operation, this number also included hard of hearing (HH) consumers ( $n = 42$ ), who were eliminated from the dataset for the purpose of this analysis. The analysis was limited to prelingually deaf consumers. All participants were in some stage of recovery from or active use of alcohol or illegal drugs. This included using prescription medication in a manner other than that prescribed by their physician. Consumers with multiple diagnoses were included in the sample, but additional data was not available for this analysis.

### *Procedure*

The study was a secondary analysis of data collected by the DODA program, which is an innovative program utilizing telemedicine to provide SUD treatment and support to deaf individuals. The program was funded by a grant from the Substance Abuse and Mental Health Services Administration's (SAMHSA) Center for Substance Abuse Treatment (CSAT). DODA is a cooperative effort of CAM, the Substance Abuse Resources and Disability Issues (SARDI) program at Wright State University, the Deaf Community Resource Center, Communication Services for the Deaf, Inc. (CSD) of Ohio, and the Ohio Department of Alcohol & Drug Addiction Services (ODADAS).

DODA counselors, case managers and coordinators were all fluent in American Sign Language and knowledgeable about deaf culture. Some members of the DODA staff are culturally deaf, and the remainder have extensive histories of communication in ASL. Clinical staff were licensed in Ohio in substance abuse and/or mental health services provision, and consumers were served in the least restrictive environment possible.

All original data were gathered in the preferred primary language of the consumers, or with reasonable accommodations to meet the consumers' specific needs. Data were de-identified and taken from information collected during the intake and assessment process. The data include information

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collected as part of the “CSAT GPRA” measure, mandated by the Government Performance and Results Act (GPRA), as well as locally collected data on mental health diagnosis, suicide attempts, and suicide ideation. Original data collection and secondary analysis were approved by the university Institutional Review Board.

The primary dependent variables were suicide attempts and suicidal ideation. These dependent variables were analyzed using chi square tests and cross-tabulation analyses to determine their association with age, gender, and mental health status.

## Results

The sample included 63 men (58.9%) and 44 women (41.1%). The mean age was 39.64 years ( $\pm 10.90$ ) and ranged from 19 to 67 years of age at the time of intake. Sixty-seven participants (62.6%) identified themselves as Caucasian, 22 participants (20.6%) as African American, six participants (6.0%) as Latino, and 12 (11.2%) chose not to respond. Mean years of education were 12.16 years ( $\pm 1.738$ ), and 62 participants (77.6%) reported a high school diploma or equivalent. Twenty-six participants (25.2%) were employed at least part time at the time of intake.

Forty-five participants (42.1%) reported having attempted suicide in the past, ranging from one attempt to more than 20, although none reported suicide attempts in the 30 days prior to the intake interview. Fifty-four (50.5%) participants reported past suicidal ideation. A total of 48 participants (42%) reported being diagnosed with a mental illness. Participants with a past mental health diagnosis reported past suicidal behavior more often than those without and were significantly more likely to report a past suicide attempt,  $\chi^2(1, N = 96) = 17.14, p = .0001$ , and were more likely to report past suicidal ideation,  $\chi^2(1, N = 96) = 10.11, p = .001$ , compared to participants without past reported mental health diagnosis (Tables 1 and 2). Of those participants who reported being diagnosed with a mental illness in the past, 30 (62.5%) reported past suicide attempts, and 31 (66.0%) reported suicidal ideation.

Women were significantly more likely than men to report past suicide attempts,  $\chi^2(1, N = 107) = 8.89, p = .003$ , and suicidal ideation,  $\chi^2(1, N = 106) = 5.81, p = .013$ , which is reflective of research in other subpopulations, as well as the general hearing population (Tables 3 and 4). Over half of the

women in this sample reported a past suicide attempt, and nearly two-thirds reported suicidal ideation.

Male participants who reported a past mental health diagnosis were significantly more likely to report past suicide attempts,  $\chi^2(1, N = 56) = 12.66, p = .0001$ , and suicidal ideation,  $\chi^2(1, N = 56) = 8.40, p = .004$ , than men who did not report a past mental health diagnosis. Female participants who reported a past mental health diagnosis were also significantly more likely to report past suicide attempts,  $\chi^2(1, N = 40) = 4.64, p = .033$ , but not suicidal ideation, than women who did not report a past mental health diagnosis (Tables 5 and 6).

## Discussion

The present study revealed that deaf consumers of the DODA program experience high self-reported rates of past suicide attempts and suicidal ideation, with 42.1% reporting past suicide attempts and over half (50.5%) reporting suicidal ideation. The prevalence rates for suicide attempts and suicidal ideation were even higher for those deaf consumers diagnosed with a mental health disorder, especially female participants. Over two-thirds of deaf women with a past mental health diagnosis reported past suicide attempts (72.7%) and suicidal ideation (71.4%). These rates are much higher than those reported for the general population (Kessler et al., 1999; Moscicki, 2001; Nock & Kessler, 2006), for other populations with disabilities and co-occurring SUD (Bakken & Vaglum, 2007; Howard et al., 2010; Johnsson & Fridell, 1998; O'Boyle & Brandon, 1998; Preuss et al., 2006; Russell et al., 2009), and for populations with SUD and co-occurring mental illness (Bakken & Vaglum, 2007; Wilcox, Conner, & Caine, 2004).

Deaf individuals face a myriad of barriers to SUD treatment, which is in some respects not surprising given the documented difficulties this population experiences in locating appropriate behavioral health services. The reason for greater than expected prevalence rates for suicide attempts and suicidal ideation for deaf individuals with SUD is not known, but could at least partially be explained by comorbid psychological disorders. For example, studies suggest that co-occurring SUD and psychological disorders cumulatively increase the likelihood of suicidal behavior. The association between suicidal behavior and mental health increases with each additional diagnosed disorder (Bakken & Vaglum, 2007; Russell et al., 2009).

A large percentage of today's deaf adults were raised during a time when deaf culture and language was not widely available to hearing families, the deaf cultural model was not generally accepted, and the medical model of deafness as a 'problem to be fixed' was the norm. Although these standards are changing (Andrews, Leigh, & Weiner, 2004), the adults who grew up in that environment represent a group under chronic stress from labored interactions over the years, which research suggests is strongly associated with suicidal ideation (Russell et al., 2009).

If suicidal behavior can be a "cry for help" then it is a type of communication worth considering in light of other factors surrounding language acquisition and may not be interpreted correctly using a "hearing standard." By better understanding what connections exist between age of language acquisition and mental health, it may be possible for service professionals to more accurately assess individual risks and provide more appropriate accommodations and service (Andrews et al., 2004). The interconnectedness of these issues, and the cumulative effect that they have, makes this a pressing concern for treatment providers for whom assessment and response to suicide risk is commonplace.

Rehabilitation literature suggests a high incidence of substance abuse among persons with disabilities (McAweeney, 2007; Morere, Dean, & Mompremier, 2009), and SUD is an increasingly common secondary diagnosis (de Miranda, 1999). The onset of SUD for a deaf individual may carry additional social stigma that compels that person to deny or hide their condition even more than what occurs among hearing individuals (Boros, 1989). This is all the more problematic for individuals with disabilities who are less likely to stay involved with SUD treatment when they are able to attend (Glenn & Moore, 2008). This is compounded by language barriers that may exist between deaf children born to hearing parents who may not be able to explain the dangers of alcohol and drug abuse, and subsequently allow their children to grow up ignorant of any potential consequences of use.

The association between suicidal behavior and suicide is complex and confounded by a wide range of other factors. Current assessments are problematic at best and can quickly become more complex when combined with cultural misunderstandings and misconceptions about deafness. Although in some ways it may be best to err on the side of caution during assessment, it is a disservice to consumers of psychiatric and psychological care to make such judgments in ignorance of the cultural and linguistic differences that complicate such evaluations. Understanding potential suicide

predictors in less exigent terms requires a great deal of caution on the part of counselors and administrators and should be an addition to the tools already at their disposal, as opposed to an alternative.

Conditions that predispose to suicide do not look the same from one culture to the next. The alarmingly high rates of attempts and ideation reported here underscore the need for targeted research into the factors that might contribute to suicide attempts in deaf individuals with SUD. The greatest limitations to the present study were the composition of the data available and sample size. This study was a secondary analysis of data that was gathered without the intention of being used to analyze history of suicidality. Instruments were not validated but were clinical tools intended to give treatment personnel an overview of a consumer's history. Questions about suicidal ideation and attempts were limited to one question for each dependent variable. Validated instruments in American Sign Language would be preferable for future research and are essential for drawing any further conclusions.

Although it is tempting to compare deaf and hearing populations, future research should start by comparing deaf populations with mental illness, substance use disorders, and language delay to the general deaf population before making comparisons to the general hearing population. There are many challenges to overcome if such studies are to be attempted. Suicide is a rare event, so studies focusing on specific low-incidence populations are difficult at best, but the results of this study indicate that further studies are needed with more robust methods.

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Table 1

*Total Sample Suicide Attempts by Mental Health Diagnosis*

Past suicide attempts	Yes	No
Past mental health diagnosis*	30 (62.5%)	18 (37.5%)
No past mental health diagnosis	10 (20.8%)	38 (79.2%)

\* Past mental health diagnoses were defined as self-reported receipt of mental health services

Table 2

*Total Sample Suicidal Ideation by Mental Health Diagnosis*

Past suicidal ideation	Yes	No
Past mental health diagnosis	31 (66.0%)	16 (44.0%)
No past mental health diagnosis	16 (33.3%)	32 (66.7%)

Table 3

*Total Sample Self-reported Suicide Attempts by Gender*

Past suicide attempts	Yes	No
Male	19 (30.2%)	44 (69.8%)
Female	26 (59.1%)	18 (40.9%)

Table 4

*Total Sample Suicidal Ideation by Gender*

Past suicidal ideation	Yes	No
Male	26 (41.3%)	37 (58.7%)
Female	28 (65.1%)	15 (34.9%)

**Table 5** Embree: Prevalence of Suicide Attempts in a Deaf Population with Co-Occur

*Reported Past Suicide Attempts*

	Male	Female
All participants	19 of 63 (30.2%)	26 of 44 (59.1%)
Participants with reported past mental health diagnosis	14 of 26 (53.8%)	16 of 22 (72.7%)

**Table 6**

*Reported Past Suicidal Ideation*

	Male	Female
All participants	26 of 63 (41.3%)	28 of 44 (65.1%)
Participants with reported past mental health diagnosis	16 of 26 (61.5%)	15 of 21 (71.4%)