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Deaf Adult Consumers of Public Behavioral Health Services in Maryland: January 1, 2016 – January 1, 2018

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Introduction

The public behavioral health care system in the United States consists of a huge network that falls under the purview of the Substance Abuse and Mental Health Services Administration (SAMHSA) under the U.S. Department of Health and Human Services. It is an agency responsible for leading public health efforts to support behavioral health and reduce the impact of substance abuse and mental illness (SAMHSA, 2018). There are several centers under the purview of SAMHSA, including the Center for Behavioral Health Statistics and Quality, the Center for Mental Health Services, the Center for Substance Abuse Prevention, and the Center for Substance Abuse Treatment. These centers collect national behavioral health data, research, and evaluation information for practitioners, health promotion specialists, policymakers, and consumers.

Each state has its own public behavioral health system that includes service provision, data collection, and information dissemination of mental health and substance use to the public. In Maryland, the Behavioral Health Administration (BHA), formerly known as the Department of Mental Health and Hygiene Administration, oversees statewide behavioral health services for Marylanders (Maryland Behavioral Health Administration, 2018). The Office of Adult Services and Special Needs Populations oversees the statewide planning, implementation, and monitoring of special populations. According to BHA, special populations include individuals who are homeless, deaf or hard of hearing, trauma survivors, incarcerated, and/or women. Beacon Health Options, a sub-contractor for BHA, administers and manages services for all individuals, including special populations, who have public medical assistance (MA) health insurance plans and who are uninsured but eligible for services.

BHA in Maryland collects behavioral health data about consumers who receive MA or are uninsured by using the Outcomes Measurement System (OMS) interview. Up until this point, statewide data on deaf consumers was not available. In collaboration with researchers at Beacon Health Options and University of Maryland and by cross-referencing multiple state-level databases, data on deaf consumers were made available to the author with permission. The focus of this paper is to describe state-level outcomes of consumers who were identified as deaf.

Literature Review

Historically, service providers and researchers have not given deaf consumers equitable attention in the areas of behavioral health services despite indications that there are significant numbers of deaf individuals (Anderson, Craig, & Ziedonis, 2016; Crowe, 2017a; Mathos & Pollard, 2016). The United States Census Bureau's (2018) last report identified 7.6 million individuals who reported having "difficulty with hearing," but did not distinguish between those who use American Sign Language (ASL) as a primary language and those who do not. In addition, the Census Bureau data did not include consumers of behavioral health services. However, in Maryland, two items were added to the OMS interview asking if the individual is deaf and an "other" box that allows clinicians to indicate the primary language as ASL. This modification now allows researchers to access data about deaf consumers of behavioral health services to evaluate treatment outcomes and other demographic characteristics of this invisible minority group.

Deaf individuals who use ASL as their primary mode of communication are underserved in many areas of care, including somatic health and behavioral health (Anderson, Craig, & Ziedonis, 2016; Crowe, 2017a; Crowe, 2017b; Kuenburg, Fellinger, & Fellinger, 2016; Pertz, Plegue, Diehl, Zazove, & McKee, 2018; Wilson & Schild, 2014). They face a number of barriers that impact the accessibility and quality of services. These barriers include: language barriers, limited health literacy, fear of stigma, concerns about confidentiality, limited access to interpreters who are fluent in ASL, lack of culturally and linguistically competent providers, and lack of services customized for deaf individuals. Such barriers lead to disparities in behavioral health care between deaf people and the general population (Anderson, Craig, & Ziedonis, 2016; Behl & Kahn, 2015; Crowe, 2017a; Kuenburg, Fellinger, & Fellinger, 2016; Pertz, Plegue, Diehl, Zazove, & McKee, 2018; Wilson & Schild, 2014).

Some studies indicate that many deaf individuals are at risk for higher levels of abuse, behavioral health problems, intimate partner violence, and trauma (Anderson, Craig, & Ziedonis, 2016; Anderson, 2010; Crowe, 2015; Fellinger, Holzinger, & Pollard, 2012; Pertz, Plegue, Diehl, Zazove, & McKee, 2018). In a study of 228 deaf and hard of hearing adults, the majority of participants reported having emotional, relational, and situational problems, but the majority of them did not seek help with those problems (Crowe, 2017c). More than 90% of participants reported struggling with stress, anxiety, unhappiness, and/or depression. Rather than seeking professional assistance, however, deaf individuals most often looked to family members and deaf friends for help. Many participants also reported feelings of discrimination and turned toward resources within the deaf community for support.

In another study of 422 deaf individuals, respondents indicated that they would consider telemental health services if there was an ASL-fluent and culturally knowledgeable clinician (Crowe, 2017a). Participants in this study also reported that they would seek help through telemental health services to address a variety of behavioral health problems, such as anxiety, mood disorders, psychosis, suicidal ideation, alcohol and drug use, relationship problems, marital problems, and conflict or anger. Other research studies support the finding that deaf individuals are more likely to see help if they have mental health providers who are fluent in ASL and understand cultural nuances (Blaiser, Behl, Callow-Heusser, C., & White, 2013; Wilson, Guthmann, Embree, & Fraker, 2015).

In Maryland, like many other states, there are limited numbers of providers who are fluent in ASL and knowledgeable about the sociocultural norms of the deaf community. However, the lack of availability of providers is only one aspect of the behavioral health care services for deaf individuals. Another aspect is the estimate of how many deaf individuals who need services and what kinds of issues they have. Several studies indicate that approximately 80% to 90% of deaf individuals with behavioral health problems do not seek services (Behl & Kahn, 2015; Blasier, Behl, Callow-Heusser, & White, 2013; Wilson & Schild, 2014). If this estimate is accurate, it begs the question: 80%-90% of *how many* deaf individuals? The purpose of this study is to answer this question in part by analyzing data from deaf consumers receiving medical assistance who obtained behavioral health care services in Maryland from January 1, 2016 to January 1, 2018. The research questions guiding this study were:

- What is the demographic profile, including diagnoses, of deaf or hard of hearing adults in the Maryland behavioral health care system?

- Are there significant relationships between variables, specifically gender, living situation, homelessness, arrests, cigarette smoking, substance use, recovery, psychosocial functioning, legal system involvement, and employment?
- Are any variables significant predictors of diagnoses?

Methodology

Participants

Deaf participants were extracted from the Maryland BHA OMS database from January 2016 to January 2018. The total number of participants, hearing and deaf, was 132,214 individuals for the same time period. The participants of this exploratory study included 7,474 deaf individuals, almost six percent (5.65%) of the total number of behavioral health consumers. The mean age was 44.08 years (SD = 12.29) and ranged from 18 to 72 years old. The sample included 3,487 men (46.70%) and 3,987 women (53.3%). Race and ethnicity were not included as part of the OMS database, and therefore was not reported.

Measures

The OMS is an interview used by behavioral health care providers in Maryland and their clients who have medical assistance. The state uses OMS data to track trends in the behavioral health system as a whole. Clinicians use the OMS for clinical assessment and treatment planning. Clinicians are required to submit clients' answers to the OMS questionnaire if a) they receive services from outpatient mental health centers (OMHCs), federally qualified health centers (FQHCs), hospital-based clinics (HSCRC), local health departments, chronic hospital clinics, special chronic hospital clinics, and Level I substance-related disorder (SRD) providers, and b) have medical assistance as their sole health insurance plan. According to the data analysis manager for the state database, there are no studies of the psychometric properties of the OMS subscales (T. Santoni, personal communication, October 2, 2018).

The OMS questionnaire includes a manual for interviewing techniques, special interviewing instructions for child and adolescent clients and special situations such as those who do not speak English, and caregiver interviews. The OMS interview also includes questions about several life domains, including living situation, psychiatric symptoms, substance use, psychosocial functioning, employment, recovery/resilience, legal system involvement, and somatic health. Furthermore, the OMS questionnaire includes two subscales, including five items from the Maryland Assessment of Recovery Scale – Short Form (MARS) and 24 items of the BASIS-24, an instrument designed to assess psychiatric symptoms.

The MARS questions instruct consumers to rate their perspectives about self-confidence, hopes for the future, making good choices, ability to set goals, and self-acceptance. Answers are rated on a Likert scale ranging from (1) not at all to (5) very much. Higher scores indicate greater recovery. Cronbach's alpha for this sample was .86.

The BASIS-24 instrument measures consumer perspectives about their psychiatric symptoms, including depression, relationships, self-harm, emotional lability, psychosis, and psychosocial functioning. Answers are rated on a Likert scale ranging from (1) no difficulty to (5) extreme difficulty. Lower scores indicate less frequency and/or severity. Cronbach's alpha for this sample was .741. Below are the following significant predictors of diagnoses:

- Mental and behavioral disorders due to psychoactive substance use: Deaf children were 3.66 times less likely (p<.0001) and deaf adults between 18 – 29 years old were .57 times less likely (p<.0001) to be diagnosed.
- Schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders: Deaf children were 3.80 times less likely (p<.0001) and deaf adults 18 – 29 years old were .39 times less likely (p=.03) to be diagnosed.
- Mood or affective disorders: Deaf children were 1.48 times less likely (p<.0001) and deaf adults 18 – 29 years old were .45 times less likely (p<.0001) to be diagnosed.
- Anxiety, dissociative, stress-related, somatoform, and other non-psychotic mental disorders: Deaf children were .36 times more likely to be diagnosed (p = .007).
- Intellectual disabilities: Deaf adults 18 – 29 years old were 1.17 times more likely to be diagnosed (p = .005).
- Pervasive and specific developmental disorders: Deaf children were 3.63 times less more likely (p = .001) and deaf adults 18 – 29 years old were 4.50 times more likely (p<.0001) to be diagnosed.
- Behavioral and emotional disorders with onset usually occurring in childhood and adolescence: Deaf children were 2.96 times more likely (p<.0001) and deaf adults 18 – 29 years old were 1.48 times more likely (p<.0001) to be diagnosed.

Procedures

Data were obtained by submitting a written request to the BHA in Maryland. Researchers from Beacon Health Options and University of Maryland compiled a database of deaf adults and children receiving behavioral health services from January 1, 2016 to January 1, 2018; the database did not include personal identifiers of individual consumers. The researcher extracted the deaf adult consumers from the database for this paper. This study was approved by the IRB at Gallaudet University.

Results

Living Situation

Eighty percent of the sample (*n* = 5976) reported living in independent residences, boarding houses, or rooming houses. A little over 10% (*n* = 783) of the sample reported living in community agency facilities, such as residential rehabilitation programs, group homes, halfway houses, recovery residences, school dormitories, or crisis residences. Close to 9% (*n* = 650) of the sample reported living in other living situations, such as with family members, friends, or caregivers. Approximately 5% (*n* = 384) individuals reported being homeless, and about 13% (*n* = 982) reported being homeless in the past six months. Sixty-five deaf adult consumers (0.9% of the sample) reported living in institutional settings, such as assisted living, skilled nursing facilities, hospitals, jails, or correctional facilities. The majority of respondents, 44.5% (*n* = 2626), reported that they were quite a bit or very satisfied with their current residence.

Recovery, Functioning, Psychiatric Symptoms, Diagnosis, and Substance Abuse

The mean score on the MARS was 3.34 (SD = .94) indicating that consumers feel somewhat confident in their recovery and functioning. This was confirmed by a separate item that asked specifically about satisfaction with recovery whose mean score was 3.31 (SD = 1.22). See table 1.0 for item means on the MARS instrument.

Table 1

Item Means on the MARS-SF Instrument

Item	N	Mean	Std. Deviation
I am confident that I can make positive changes in my life.	5659	2.72	1.18
I am hopeful about the future.	5660	2.62	1.14
I believe I make good choices in my life.	5660	3.05	1.11
I am able to set my own goals in life.	5658	3.07	1.12
I feel accepted as who I am.	5652	2.45	1.30

* Items on the MARS-SF were optional for consumers to answer. Thus, the numbers of individuals answering the questions may be less than the total sample.

The mean score on the BASIS-24, which measured psychiatric symptoms, was 1.61 (SD = .72) indicating that deaf consumers in the sample had moderate difficulty with psychiatric symptoms. See Table 2 for the subscale means of the BASIS-24.

Table 2

*Subscale Means of the BASIS-24**

Subscale	N	Mean	Std. Deviation
Overall Adult Functioning	5662	3.00	.85
Emotional Lability	5629	2.03	1.09
Depression	5621	1.93	.93
Relationship	5629	1.68	.93
Psychosis	5630	.97	1.04
Substance Abuse	5591	.79	.99
Self-harm	5657	.42	.76

* Items on the BASIS-24 were optional for consumers to answer. Thus, the numbers of individuals answering the questions may be less than the total sample.

The OMS questionnaire included ICD-10 (International Classification of Disease, 10th edition) codes which correspond to primary psychiatric diagnoses. In general, behavioral health ICD-10 codes are in 11 general categories:

1) Mental disorders due to known physiological conditions
2) Mental and behavioral disorders due to psychoactive substance use
3) Schizophrenia, schizotypal, delusions, and other non-mood psychotic disorders

4) Mood (affective) disorders,
5) Anxiety, dissociative stress-related, somatoform, and other nonpsychotic mental disorders
6) Behavioral syndromes associated with physiological disturbances and physical factors
7) Disorder of adult personality and behavior
8) Intellectual disabilities
9) Pervasive and specific developmental disorders
10) behavioral and emotional disorders with onset usually occurring in childhood and adolescence
11) Unspecified mental disorder.

Approximately 43% of the sample was diagnosed with a mood disorder, such as depression and bipolar disorder. Nearly a quarter of the sample (24.35%) was diagnosed with a substance abuse disorder. The third highest category of diagnoses, anxiety disorders, had 13.21% of the sample; see Table 3 for frequency counts of diagnostic categories.

Table 3

Frequency counts of diagnostic categories.

ICD-10 Codes	Categories	Frequency	Percent of the Sample
F01-09	Mental disorders due to known physiological conditions	27	0.36
F10-19	Mental and behavioral disorders due to psychoactive substance use	1820	24.35
F20-29	Schizophrenia, schizotypal, delusions, and other non-mood psychotic disorders	589	7.88
F30-39	Mood (affective) disorders	3239	43.33
F40-48	Anxiety, dissociative stress-related, somatoform, and other nonpsychotic mental disorders	987	12.21
F50-59	Behavioral syndromes associated with physiological disturbances and physical factors	4	0.05
F60-69	Disorders of adult personality and behavior	75	1.00
F70-79	Intellectual disabilities	25	0.33
F80-89	Pervasive and specific developmental disorders	23	0.31
F90-98	Behavioral and emotional disorders with onset usually occurring in childhood and adolescence	222	2.97
F99	Unspecified mental disorder	463	6.19
	TOTAL	7474	

Approximately1820 deaf individuals were diagnosed with substance use disorder. An alarmingly high number, almost three-quarters of those were diagnosed with opioid-related disorders. See table 4.0 for frequency counts of detailed substance abuse diagnoses.

Table 4.0: Frequency counts of substance abuse diagnoses.

ICD-10 Codes	Categories	Frequency	Percent of the Sample
F10	Alcohol-related disorders	292	16.04
F11	Opioid-related disorders	1322	72.64
F12	Cannabis-related disorders	72	3.97
F13	Sedative, hypnotic, or anxiolytic-related disorders	3	0.16
F14	Cocaine-related disorders	49	2.69
F15	Other stimulant-related disorders	36	1.98
F16	Hallucinogen-related disorders	3	0.16
F17	Nicotine dependence	4	0.22
F18	Inhalant-related disorders	0	0
F19	Other psychoactive substance-related disorders	39	2.14
	TOTAL	1820	100

Employment

Only 17.5% (*n* = 1310) of the sample reported being currently employed. Of those, approximately half (48.4%, *n* = 679) reported that they were satisfied with their employment from quite a bit to very much. Over half of those working (51.9%, *n* = 765) reported they worked from 31 hours per week to more than 40 hours per week.

Legal System Involvement

Approximately six percent of the sample (*n* = 463) reported being arrested and in jail or prison in the past six months.

Somatic Health

More than half of the respondents (53.8%, *n* = 4021) reported that they smoke cigarettes. Approximately 85% (*n* = 3070) reported smoking between one and 20 cigarettes per day. See table 5.0 for frequency counts of types of smoking. Out of 5,446 respondents who answered a question about how they rated their health, approximately 85% (*n* = 4601) reported they were in good to excellent health. See Table 5 for the frequency counts of the types of smoking participants used.

Table 5

Frequency Counts of Types of Smoking.

Type of smoking	N	Percent of the Sample
Cigars, cigarillos, little cigars	358	4.8
Chewing tobacco, dip, snuff	115	1.5
E-Cigarettes, vapes	396	5.3
Hookah, water pipes	48	0.6
Bidis, kreteks, clove cigarettes	216	2.9

Post Hoc Analyses

Because this was the first statewide-level data collection on deaf consumers of public behavioral health services in Maryland, the researcher conducted additional post hoc analyses to examine specific variables in greater detail. Included were relevant non-significant findings as part of the exploratory analyses so future research studies could evaluate these results.

Gender. An independent samples t-test was conducted to examine whether there were differences between men and women on the BASIS-24 scale, which measured psychiatric symptoms, and the MARS scale, which measured recovery and functioning. There were no significant differences on scores between men and women on either scale. Next, a chi-square analysis was conducted to examine whether there were gender differences between ICD-10 diagnostic codes, that is, whether males or females were diagnosed more frequently with particular diagnoses. The results of this analysis were non-significant.

ICD-10 Diagnoses. Chi-square analyses were conducted to examine whether there were significant relationships between several nominal-level variables.

- There was a significant relationship between individuals' diagnoses and their living environments ($\chi^2 = 410.34$, 40, $p < .0001$).
- There was a significance relationship between individuals' diagnoses and their satisfaction with their living environments ($\chi^2 = 134.85$, 40, $p < .0001$).
- There was a significant relationship between individuals' diagnoses and whether they were homeless in the past six months ($\chi^2 = 94.36$, 20, $p < .0001$).
- There was a significant relationship between individuals' diagnoses and whether they were arrested ($\chi^2 = 118.25$, 10, $p < .0001$) or incarcerated ($\chi^2 = 113.97$, 10, $p < .0001$).
- There was a significant relationship between individuals' diagnoses and whether they were employed ($\chi^2 = 125.24$, 10, $p < .0001$).
- There was a significant relationship between individuals' diagnoses and whether they smoked cigarettes ($\chi^2 = 410.01$, 10, $p < .0001$).
- There was a significant relationship between individuals' diagnoses and their health ($\chi^2 = 259.53$, 40, $p < .0001$).
- There was a significant relationship between ICD codes and scores on the BASIS-24 ($R = .2019$, $p < .0001$) and the MARS ($R = -1.60$, $p < .0001$).

A multinomial logistic regression was conducted in order to examine whether age, gender, and/or MARS scores were predictors of diagnoses. Age was categorized into three groups: child under 18 years old, adult 18-29 years old, and adult over 30 years old. The goodness-of-fit statistic indicated that the model adequately fit the data. Using the Nagelkerke pseudo R-square, 27% of the variance was explained by the predictors on the dependent variable. Only age was a significant predictor ($p < .0001$).

Discussion

One of the ways we can understand the data from deaf individuals in the public mental health system is to compare their demographics with their hearing counterparts. In general, the frequencies and scale scores for deaf consumers were similar to their hearing counterparts.

Again similar to their hearing counterparts, the majority of deaf individuals resided in private homes (80%) compared with 84.4% (2016) and 84.7% (2017).

Scores on the MARS were only slightly lower than their hearing counterparts. Deaf participants scored a 3.31, which indicated that they felt somewhat confident compared to average scores of 3.38 (2016) and 3.41 (2017).

On the BASIS-24, deaf consumers reported having the most difficulty with depression, emotional lability, and depression, which was similar to their hearing counterparts. See Table 6 for a comparison of mean scores on the BASIS-24 overall functioning dimension as well as the subscales for deaf and hearing consumers.

Table 6

Comparison of Mean Scores on the BASIS-24 Overall Functioning Dimension and Subscales among Deaf and Hearing Consumers.

Subscale	Deaf Mean	Hearing Mean 2016	Hearing Mean 2017
Overall: Adult Functioning	3.00	1.59	1.60
Emotional Lability	2.03	2.02	2.04
Depression	1.93	1.94	1.96
Relationship	1.68	1.67	1.68
Psychosis	0.97	0.81	0.84
Substance Abuse	0.79	0.62	0.61
Self-Harm	0.42	0.38	0.38

Only 17.5% of the sample reported being currently employed compared to 26.3% of hearing counterparts in 2016 and 27.1% in 2017. This finding is consistent with studies that indicate lower employment rates for deaf individuals (Garberoglio, Cawthon, & Bond, 2016). Among deaf individuals without behavioral health issues, 47% of deaf individuals are not employed (Garberoglio et al., 2016).

Approximately 6% of the deaf sample reported being arrested and in jail or prison in the past six months compared with 5.2% of hearing individuals in 2016 and 5% in 2017. Though the rates of arrest and/or imprisonment are slightly higher than their hearing counterparts, there are no national statistics about arrest and incarceration rates among deaf individuals.

More than half of the deaf respondents (53.8%) reported that they smoke cigarettes compared to 40.7% of hearing individuals in 2016 and 38.3% in 2017. Approximately 85% of deaf smokers reported smoking between 1 and 20 cigarettes per day, similar to hearing smokers (84.6% in 2016 and 85.2% in 2017).

Approximately 43% of the sample was diagnosed with a mood disorder, such as depression and bipolar disorder. Nearly a quarter of the sample (24.35%) was diagnosed with a substance abuse disorder. The third highest category of diagnoses, anxiety disorders, applied to 13.21% of the sample. The BHA public database did not provide diagnoses from hearing consumers. So it was impossible at this point to compare rates of diagnoses between deaf and

hearing consumers. The high incidence of mood disorders is comparable to other studies of with deaf individuals (Anderson, Craig, & Ziedonis, 2016; Anderson, 2010; Crowe, 2015; Crowe, 2017c; Fellinger, Holzinger, & Pollard, 2012; Pertz, Plegue, Diehl, Zazove, & McKee, 2018). A significant concern is also the high incidence (nearly 25%) of alcohol and substance use disorders. Within the deaf sample diagnosed with a substance use disorder, nearly 75% were addicted to opioids.

The post hoc analyses suggest that there are numerous variables that are associated with particular diagnoses, such as where deaf individuals live, how satisfied they are where they live, whether they have been homeless, arrested, or incarcerated, whether they were employed, smoked cigarettes, their perspectives of their general health. Other studies suggest similar associations in studies of hearing individuals who have behavioral health issues (Ferron, Devitt, McHugo, Gregory, Jonikas, Cook, & Brunette, 2016; Rao, Raney, & Xiong, 2015; Saavedra, Lopez, Gonzalez, Arias, & Crawford, 2015; Zolezzi, Abdulrhim, Isleem, Zahrah, & Eltorki, 2017).

Results also indicated that deaf children and adults were significantly less likely to be diagnosed with: a) mental and behavioral disorders due to substance use, b) schizophrenia spectrum disorders, c) and mood disorders. Deaf children and adults were significantly more likely to be diagnosed with pervasive developmental disorders and behavioral disorders, usually in early childhood or adolescent onset. This is supported by other studies that point to language development, dysfluency, and deprivation as having an effect (Crump & Hamerdinger, 2016; Hall, Levin, & Anderson, 2017; Mathos & Pollard, 2016). Deaf children are only more likely to be diagnosed with anxiety and intellectual disabilities. Though few studies exist about specific diagnoses among deaf individuals, several studies indicate that diagnoses of intellectual disabilities and mental disorders, such as anxiety, are prevalent (Dammeyer & Chapman, 2017; Dehnabi, Radsepehr, & Foushtanghi, 2017).

Strengths and Limitations

A strength of this research is that this was the first time statewide behavioral health outcome data were obtained from a population of deaf individuals in Maryland. The data on deaf consumers reveal that in many respects, their demographic profiles are similar to others in the behavioral health care system. Up until now, this knowledge had been unknown. In addition, the number of deaf adults in the behavioral health care system is much greater than expected. This database identified approximately 230 deaf services provider, which again, was unexpected. Finally, the data from all deaf consumers in the dataset were used, which gives aggregated information directly from a target population.

There are limitations to this dataset. The deaf individuals in this sample only included those who had medical assistance or were eligible for medical assistance. There are most likely many more deaf individuals in Maryland who receive behavioral health services with private insurance plans, Medicare plans, or self-pay. In addition, there are untold numbers of deaf individuals who have mental health or substance use problems, but do not seek help. Another limitation is that the public dataset found on the BHA website did not present a breakdown of diagnoses. Thus, the prevalence of particular diagnoses of deaf consumers were not compared to their hearing counterparts.

Implications for Future Research and Practice

Recent modifications to the OMS interview now allow deaf-related data to be extracted, which can help clinicians, researchers, and behavioral health policymakers better understand the profiles of deaf consumers in the public behavioral health system. Also, the dataset only included those receiving medical assistance or were eligible for medical assistance. Though the number of deaf individuals is large, the actual number of deaf individuals who are receiving services or could benefit from services is much larger.

The results of this study raise immediate concerns about the prevalence of mental health and substance use problems among a large number of deaf Maryland residents. The issue of specific substance use such as opioids points to a need for increased service providers and programs able to work with dually-diagnosed deaf consumers. Clinicians who regularly work with deaf consumers in Maryland are part of a small close-knit group who know one another and often refer clients to each other. Since over 200 providers of deaf services were identified in the dataset, there are questions about the degree of cultural sensitivity and linguistic adequacy of the service providers. A next step may be to survey providers of deaf services to evaluate the levels of expertise and linguistic fluency among clinicians.

The dataset also included a sample of deaf children in the behavioral health system in Maryland. This data will be analyzed and disseminated as a second part to this study. The profiles presented in this study were of deaf adults aged 18 years and older; however, some deaf youth remain in school beyond 18 years old. There is a different OMS interview available for deaf youth, which may shed light on the demographics of this sub-group of the deaf community.

Finally, the findings of post hoc analyses suggest that more in-depth research is needed to better understand the relationship of diagnoses and other variables, such as employment, housing, arrests, incarceration, and health. Large-scale studies are virtually nonexistent in the literature. Now that data are available, trends of deaf populations is a possibility. Studies about the reliability of diagnoses of deaf individuals as compared to hearing would be important to consider.

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