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An Analysis of the Factors that Impact Medicaid Recipient Tobacco Quit Rates

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Abstract

Background and Objectives: Tobacco use is the leading preventable cause of disability and disease in the United States. Individuals of low socioeconomic status are more likely to use tobacco, suffer from tobacco related illness, and fail to quit or stay quit. Medicaid recipients enrolled in the South Dakota QuitLine have significantly lower quit rates than participants who aren't enrolled in Medicaid. The purpose of this paper is to review the factors that impact Medicaid recipients' ability to quit or stay quit.

Methods: Tobacco use and demographic data were collected at enrollment and seven months post-enrollment using standardized assessments for 16,323 eligible participants who were enrolled in the South Dakota QuitLine between 2017 and 2019.

Results: Medicaid recipients enrolled in the South Dakota QuitLine were predominantly female, less educated, and had more chronic health conditions than participants without Medicaid. They were also much less likely to use cessation medications than the participant group not receiving Medicaid benefits. Within the Medicaid population, those who quit followed accepted trends; shorter tobacco use duration, less cigarettes smoked per day, no behavioral health conditions, and tobacco free policies at home or in their vehicles.

Conclusion: Promotion of the South Dakota QuitLine and its associated evidence-based cessation methods within the South Dakota Medicaid program can be improved upon. Additional incentive-based programs could be beneficial to decrease the number of Medicaid recipients who use tobacco and to lower the state's expenditures on health care services for tobacco users enrolled in Medicaid.

Introduction

Tobacco use can be explained as a behavioral process that elicits both physiological and psychological addictive mood in individuals (Hall & Doran, 2016). The use of tobacco is a crucial modifiable risk factor for organ system failure and disease, yet it is still prevalent in the United States. It is currently the leading cause of disability and preventable disease in the United States (West, 2017). As of 2019, 14.0% of adults in the United States smoke cigarettes, the number is slightly higher for all tobacco types. The percentage of adults who smoke is slightly higher that the national average in the Midwest region at 16.4%, and higher yet in South Dakota at 19% of all adults (Centers for Disease Control and Prevention [CDC], 2020a). Public health entities have long been looking for solutions to the continuing issue of tobacco use, and several evidence-based methods exist. One of the most popular are cessation quitlines, which are effective, evidence-based treatments proven to increase six-month smoking cessation quit rates when compared with no intervention (Zhu et al., 2002).

The South Dakota QuitLine is a program from the state's Department of Health that offers tobacco cessation services to any South Dakota resident interested in quitting. The program offers up to twelve sessions of individualized cessation coaching from trained health coaches, up to twelve weeks supply of nicotine replacement therapy in the form of patches, gum, lozenges, or the cessation medications bupropion (Zyban) or varenicline (Chantix), or a Kickstart Kit and up to a four week supply of nicotine replacement therapy [NRT] with a self-help guide. The program offers online ordering services in addition to other online resources outlining the dangers of tobacco, programs for specific populations, and coping resources. In a calendar year an individual trying to quit can utilize the phone service or the Kickstart Kit twice.

The South Dakota QuitLine is part of the South Dakota Tobacco Control Program, whose efforts are based on best practices recommended by the CDC. The South Dakota Tobacco Control Program promotes efforts to prevent tobacco use and reduce the death and disease caused by tobacco use. The South Dakota Tobacco Control Program develops programming to promote, encourage, and support tobacco-free lifestyles to reduce tobacco-related disparities within South Dakota (South Dakota Department of Health, 2020).

There are certain groups in South Dakota that have a higher risk for tobacco related health issues, and they are prioritized with special services and programs to address the specific needs of each group. The five priority populations identified by the South Dakota QuitLine program include pregnant women, youth under age 18 and young adults aged 18 to 24, Native Americans, individuals with a behavioral health condition and/or substance use disorder, and Medicaid recipients.

Socioeconomic status is the single biggest predictor of tobacco use (CDC, 2020b). South Dakota Medicaid serves residents of low socioeconomic status including low income families, children in foster care, elderly or disabled adults, and pregnant women. Nearly one in seven South Dakotans will have health coverage through Medicaid or the Children's Health Insurance Program (CHIP) in any given month (South Dakota Department of Social Services [DSS], n.d.). In State Fiscal Year 2020, 141,620 individuals were covered by South Dakota Medicaid with an

average monthly enrollment of 115,731 individuals (South Dakota DSS, 2020). There are different income requirements for each group of recipients, as outlined in **Figure 1**. These values are set each year by a combination of federal and state policies ranging from the Federal Social Security Act to the Administrative Rule of South Dakota.

Figure 1

2020 calendar year federal poverty guidelines

Source: South Dakota Medicaid

Eligibility Group	**% FPL**
Pregnant Women	138%
Children Under Age 6	182%
Children Age 6-19	116%
Parent/Caregiver/Relatives of Low-Income Children	52%
Aged, Blind and Disabled (single)	74%
Aged, Blind and Disabled (couple)	83%
CHIP (Children's Health Insurance Program)	209%

South Dakota Medicaid coverage of services depends on if an individual recipient has full or limited coverage. For most recipients medically necessary services including but not limited to yearly check-ups, dental exams and cleanings, eye exams, immunizations, emergency cares, necessary operations, and prenatal and postpartum care for pregnant women are all covered. Provider types eligible to perform services include but are not limited to physicians, physician assistants, dentists, federally qualified health centers (FQHC), rural health centers (RHC), chiropractors, dieticians, and community health workers. Transportation to medical care and reimbursement for travel to medical appointments outside of a recipient's city are also covered. South Dakota Medicaid is the payer of last resort, so if a recipient has any other health coverage, they must pay before Medicaid. Non-covered services and any cost shares associated with services are the responsibility of the recipient.

The South Dakota QuitLine program is unique in that it offers free access to cessation services for all South Dakotans, so the South Dakota Medicaid program is not responsible for the cost of Medicaid recipients using the service. Medicaid is not federally obligated to pay for or explicitly cover tobacco cessation services for non-pregnant recipients. They do, however, cover the price of NRT for Medicaid recipients enrolled in the QuitLine that do not have another insurance provider, using an interagency reimbursement process. South Dakota Medicaid is a program of the state Department of Social Services and works closely with the state Department of Health to direct recipients to utilize the QuitLine program.

Medicaid recipients and South Dakotans with low income levels use tobacco at higher rates than the general population. Nationally, Medicaid recipients are more than twice as likely to use tobacco than adults with Medicare or private insurance (CDC, 2020b). This is also true in South Dakota, where 43.2% of Medicaid recipients use tobacco, compared to the general population's use rate of 23.6% (Gildemaster, 2020). One factor that impacts this higher use rate is that

tobacco companies increase advertising in low-income neighborhoods (South Dakota Department of Health, n.d.). Since this population uses more tobacco, they are also more likely to be exposed to secondhand smoke. Medicaid recipients are also at disproportionate risk for tobacco-related health issues. All these factors classify Medicaid recipients as one of the five aforementioned QuitLine priority population groups.

According to data from South Dakota Quitline seven-month follow-up assessments from the years 2017, 2018, and 2019, the average quit rate for QuitLine participants not enrolled in Medicaid was 40.5%. The quit rate of Medicaid recipients during that same time period was 29.4% (Kerkvliet et al., 2020). The purpose of this study is to compare several factors that may impact Medicaid recipient's low tobacco quit rates.

Methods

The South Dakota QuitLine is a Department of Health program that offers a toll-free telephone cessation service for tobacco users. Participants in both the Medicaid recipient group and the non-Medicaid recipient group were provided the same treatment options free of charge.

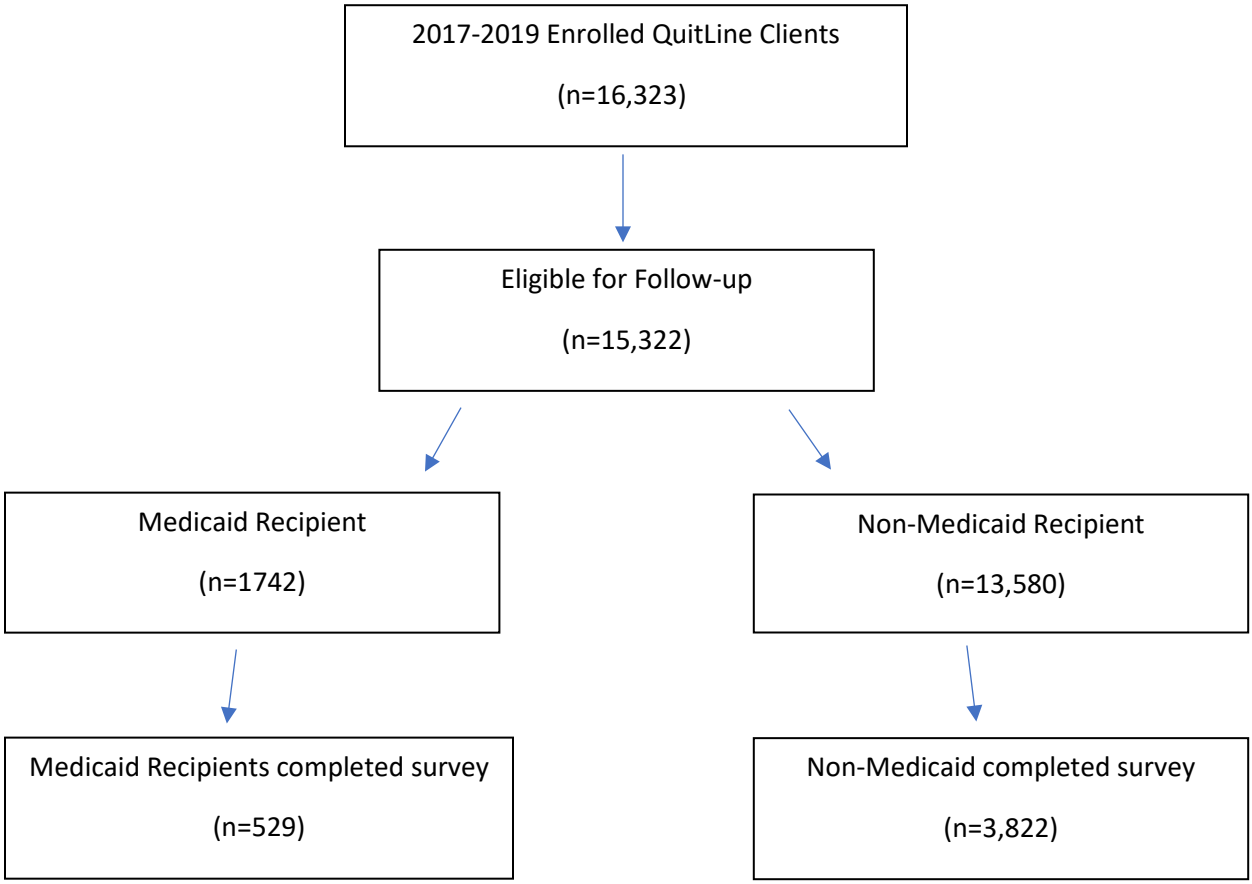
QuitLine service data for this study covered a two-year period (2017 to 2019). Total enrollment in this time period was 16,323. Of this cohort, 1,001 participants did not consent to follow-up and were excluded. Following North American Quitline Consortium (NAQC) procedures for uniform measurement of quit rates, recipients who did not receive an evidence-based treatment, and participants who re-enrolled in the service before completing the seven-month follow-up were excluded (NAQC, 2015a). Quit Guide only clients are not included in the follow-up evaluation population per NAQC procedures (NAQC, 2015a).

At the time of enrollment, quitline coaches collected demographic and tobacco use information using standard questions from the minimal data set (MDS) for intake (NAQC, 2015b). Follow up evaluation is conducted by trained staff using the NAQC recommended procedures (NAQC, 2015a). Between 6.5 and 7.5 months after enrolling in the quitline service, all consenting participants are contacted by phone and asked to complete a short telephone interview. Items on this survey include all standard questions from the Follow-up MDS, as well as state-added questions regarding satisfaction, cessation product use, and reasons for relapse. A pre-notification letter which includes a paper or online survey completion option, followed up by up to seven call attempts were made to each participant on differing days and at varying times before the participant was considered lost to follow-up. Research assistants who conducted the telephone surveys were trained in data collection methods including handling difficult calls, soft conversations, and data entry procedures. The interview scripts, questions, and responses are part of a custom web-based application and integrated database. All data are stored on a secure, password-protected server. The data collection procedures were approved by a university Institutional Review Board.

During the initial coaching session, participants were asked to self-report chronic health conditions by answering "yes" or "no" to each of the following questions, "Have you ever been told you have, or have been treated by a healthcare professional for any of the following: heart attack, stroke, cancer, diabetes, high blood pressure, high cholesterol, mental health issue

(depression, anxiety, bipolar disorder, etc.)?" Measurement of Medicaid insurance status was self-report (yes/no). Inclusion of the Medicaid recipient group was defined as responding "yes" to the Medicaid option of the question. **Figure 2** outlines the breakdown of participants to show the number of Medicaid recipients' data was ultimately collected from.

Figure 2. Follow-up Call Outcomes, all South Dakota QuitLine Services, 2017-2019



Demographic characteristics included age, gender, race, education, and Medicaid status. Education was classified as less than high school, high school diploma or GED, some college or university degree. Measures related to tobacco use included duration of use and type of product used. Tobacco use duration was calculated by the age at first reported use minus current age. Type of tobacco use was assessed for cigarettes, smokeless tobacco, pipe or cigars, e-cigarettes or poly-product use. These measures are condensed for optimal reading in **Figure 3**.

Tobacco cessation was measured seven months after enrollment using the question, "Have you used any tobacco, even a puff or a pinch, in the last 30 days?" The number of callers responding "no" was used as the numerator for calculating the standard responder quit rate with the denominator the number of respondents (NAQC, 2015b).

Figure 3. A Comparison of Medicaid and Non-Medicaid Recipient Demographics

Service Type	Medicaid Recipients	Non-Medicaid Recipients
Phone Service	79.2%	59.0%
Kickstart Kit	20.8%	41.0%
Average age (years)	43.51 (SD 14.74)	43.54 (SD 14.46)
Gender		
Male	25.0%	46.0%
Female	75.0%	53.9%
Education		
Less than high school	24.2%	9.8%
High school diploma or GED	39.9%	39.4%
Some college or a university degree	35.9%	50.8%
Type of tobacco or vaping product used		
Cigarettes only	84.4%	77.8%
Spit tobacco only	1.1%	5.9%
Pipe or cigar use only	1.6%	1.1%
E-cigarette/vaping product only	0.2%	0.5%
Polytobacco use	12.7%	14.6%
Duration of tobacco use (years)	28.6 (SD 14.9)	29.5 (SD 14.7)
Pregnant or postpartum	7.6%	0.7%
Chronic health condition, overall*		
Multiple conditions	53.1%	35.1%
No chronic health conditions	9.4%	26.6%
Chronic health condition, by type**		
MHC/SUD	71.2%	37.8%
Asthma or COPD	37.2%	19.5%
High blood pressure	19.2%	21.6%
Diabetes	14.9%	8.3%
Cancer	9.3%	6.5%
Heart attack	6.3%	4.3%

*Phone service only, Medicaid n=1378, non-Medicaid n=8,003

**Phone service only, Medicaid n=1377, non-Medicaid n=7,997

Results

Participant Characteristics

Approximately 11.7% of South Dakota QuitLine participants (1,742/15,580) in this two-year consecutive sample self-reported benefiting from Medicaid. Of those participants, 29.4% self-reported not using tobacco in the previous 30 days at the time of the seven-month post-enrollment survey.

Population Comparisons

The Medicaid recipient participants were predominantly female, more likely to have less than a high school education, and were more frequently cigarette-only users. The presence of chronic health conditions varied greatly between the two groups. 53.1% of Medicaid recipient participants had multiple chronic health conditions as opposed to 35.1% of the non-Medicaid group of enrollees. 21.4% of Medicaid recipients had both a Mental Health Condition (MHC) and Substance Abuse Disorder (SUD) in comparison to the 8.3% of non-Medicaid recipients who have both. Using self-reported medication use data in 2017 and 2018 and SD QuitLine service reported medications shipped in 2019, 79.8% of Medicaid recipients responding to the seven-month follow-up survey used a medication or NRT to help them quit. The most common product selected was NRT, with 64.4% of enrollees followed by no medications at 20.2%. This rate of non-medication use is close to the non-Medicaid population at 17.7%. No differences in quit rates were found by type of product used.

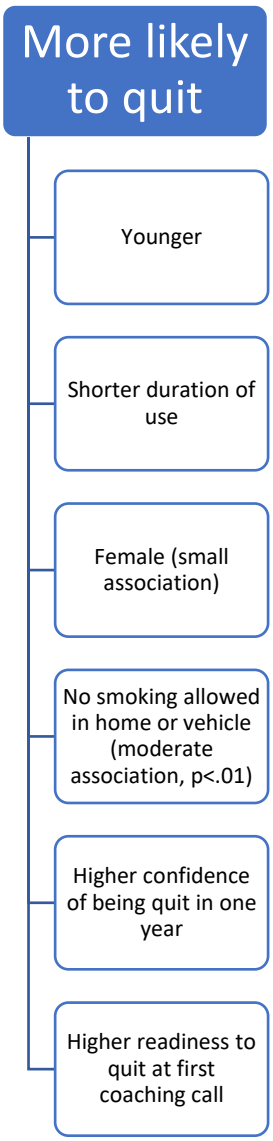
The average readiness to quit, duration of tobacco use, and cigarette use equivalent measured in Medicaid recipient participants and non-Medicaid recipients were all very similar, with the non-Medicaid recipient group having a slightly higher duration of tobacco use and cigarette use equivalent.

Medicaid Recipient Characteristics

Within the Medicaid recipient population there were similar demographic factors that predicted quit success. **Figure 4** displays some of the trends found in recipients that quit compared to those who didn't. Medicaid recipients who quit were younger and tended to be female with a small association. They also used tobacco for a shorter duration of time. There was a moderate association between quitting and having a smoke free policy in either one's home or vehicle.

At intake, participants were asked what their confidence in being quit one year from now was on a scale of 1-10, with 10 indicating high confidence that they will be quit. Those who quit had an average confidence rating of 8.8 (SD 0.12) versus 8.4 (SD 0.09) ($p<.01$) for those who didn't end up quitting. At the first coaching session a participant attends, a coach also asks them to rate their readiness to quit using tobacco right now on a scale of 1-10. Those who quit also rated themselves significantly more ready to quit at intake with an average rating of 9.6 out of 10 verses 9.3 ($p<.05$) for those who didn't quit.

Figure 4. An Overview of the Demographics of Medicaid Recipients who Quit



Those with a self-reported behavioral health condition (BHC), which include but are not limited to depression, anxiety, and SUD, were less likely to quit with small to moderate association. Those with a current MHC and those in current distress showed no difference in quit rates. Current distress was defined as answering yes to the following intake question, “During the past two weeks have you experience any emotional challenges such as excessive stress, feeling depressed, or anxiety?” There were also no differences in quit rates among individuals who used different types of NRT medications. There was no association between quitting and living with someone who currently uses tobacco. There was no difference in age of first use or type of tobacco used.

Discussion

Factors associated with quitting within the Medicaid recipient population align with other findings and suggest that within the Medicaid population factors that influence quitting align with those for the general population (West, 2017). These are accepted indicators of the likelihood in which an individual will quit tobacco or stay quit. The similar values between the groups indicate other factors had a greater influence on the quit rate of this population. The prevalence of BHC, MHC, and SUD, however, is higher in the Medicaid recipient population, making these factors more likely to have an impact on the lower quit rate in this population. Populations of individuals with a BHC, MHC, or SUD generally find it harder to quit and have lower quit rates (Kerkvliet et al., 2014).

The disproportionately low enrollment and quit rate among Medicaid recipients shows that there is room for improvement in the coordination of the South Dakota QuitLine and South Dakota Medicaid programs. The South Dakota QuitLine is a unique program because it offers cessation coaching and medication at no cost to all tobacco users, including Medicaid recipients. This leaves the possibility for South Dakota Medicaid to contribute to the relationship in other forms to increase the amount of Medicaid recipients that use the QuitLine program, and to target programming around the factors that influence Medicaid recipient's lower quit rates.

The generally lower quit rate of the Medicaid recipient population is not a South Dakota specific issue (Zhu et al., 2002). One study was completed in Wisconsin to test the effects of providing Medicaid recipients with an incentive to enroll and complete quitline coaching. Medicaid recipients who completed a baseline assessment earned $40, and another $40 for completing a 6-month assessment, another $40 for confirming abstinence, and $30 per coaching call completed through the program (up to five). The incentivized group completed an average of 3.8 coaching calls out of the five possible, which is more than the average of 2.9 coaching calls completed without the incentive in place. Overall, the program led to a 7.9% increase in participants who stayed quit at the 6-month follow up assessment. The study ultimately showed that smoking cessation rates among low-income smokers who received payments for treatment engagement were more likely to quit. The cost of the incentive can vary, but the amount per individual in the program ultimately proved to be cost-effective when the benefits of long-term health improvements were considered (Mundt, et. al, 2018).

In addition to or instead of monetarily incentivizing participation in the South Dakota QuitLine program, South Dakota Medicaid and the South Dakota QuitLine could construct a promotional strategy that targets all Medicaid users or just those that are confirmed tobacco users. Research suggests that direct communications about all cessation services offered can be effective in recruiting more recipients to engage in the quitline. The greatest selling point of the QuitLine is that it is a free and effective evidence-based service, and it should be promoted as such. Evidence-based NRT options should be promoted directly in an easily comprehendible guide designed for the ease of reading by the recipients. These can be in a paper or electronic format and mailed, emailed, or texted to all eligible recipients.

Any form of increased promotion or encouragement to participate in the South Dakota QuitLine program would be financially beneficial for South Dakota Medicaid. Nationally, Medicaid spends $40 billion on health care for smoking related diseases annually, which is more than 15% of the national Medicaid program's total annual expenditure (CDC, 2020a). Reducing just cigarette smoking prevalence by 1% would save Medicaid $2.6 billion dollars in a year (Hall & Doran, 2016). South Dakota Medicaid has limited data on the exact cost of tobacco use to their program, but if even 29.4% of a larger enrollment group of state Medicaid recipients can stay quit using the South Dakota QuitLine services, the Medicaid program could be facing a large total savings.

Conclusion

This study addresses important gaps in the literature regarding the use and effectiveness of population-based quitline services for Medicaid recipients. Results support prior findings that Medicaid recipients are able to successfully quit tobacco use, although they are less likely to quit tobacco use compared to those with other forms of health insurance. This is most likely due to the larger percentage of Medicaid recipients suffering from chronic health conditions of multiple varieties. There are far more Medicaid recipients who have multiple chronic health conditions, BHCs, MHCs, and SUD. These conditions frequently make it more difficult for Medicaid and non-Medicaid populations to quit and stay quit.

There are evidence-based ways to improve the quit rates in this population and ultimately improve the health and decrease the health care costs for Medicaid recipients. The South Dakota Medicaid program can invest resources into recruiting recipients to enroll in the QuitLine and focus on coverage of and access to treatment for chronic health conditions including BHCs, MHCs, and SUD that may improve quit rates within the Medicaid population as well.

No matter the method of promotion used, Medicaid recipients need to remain a priority population within the South Dakota QuitLine program both for their health benefit, and the financial benefit to the state when individuals successfully quit.

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