

IMPROVING THE SOCIAL AND COMMUNITY CONTEXT OF PUBLIC MIDDLE AND HIGH SCHOOL
STUDENTS IN BURKE COUNTY, NORTH CAROLINA THROUGH INCREASING HEALTH LITERACY
RELATED TO ILLICIT DRUG USE

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A Capstone Project submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Public Health in the Leadership in Practice program in the Gillings School of Global Public Health.

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ABSTRACT

Molen Alfaro Barrameda, Jeff Cineas, Mandolin McConaha, Ahmad Fahim Pirzada, Mason Zeagler:
IMPROVING THE SOCIAL AND COMMUNITY CONTEXT OF PUBLIC MIDDLE AND HIGH SCHOOL
STUDENTS IN BURKE COUNTY, NORTH CAROLINA THROUGH INCREASING HEALTH LITERACY
RELATED TO ILLICIT DRUG USE

(Under the direction of Sarah Diekman)

Increasing the health literacy of the population is an objective within the domain of social and community context. Addressing substance use disorder is a priority in Burke County, and the national drug overdose crisis disproportionately impacts populations with low health literacy. Burke County Public middle and high school students aged 12-18 years demonstrate low health literacy related to illicit drugs and many use them. The consultant team recommends the Burke County Board of Commissioners adopt policies and allocate funds to engage a coalition of community stakeholders to implement the Project STAR prevention program to increase health literacy related to illicit drug use among Burke County Public middle and high school students. The purpose of implementing this evidence-based program will be to improve health and well-being in Burke County.

Key Words: Health Literacy, Illicit Drugs, Burke County

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LIST OF ABBREVIATIONS

BC	Burke County
BCBOC	Burke County Board of Commissioners
BCPS	Burke County Public Schools
EBCD	Experience-Based Co-Design
PDSA	Plan-Do-Study-Act
Project STAR	Project Students Taught Awareness and Resistance
SDOH	Social Determinant of Health

COMMON PROPOSAL

Introduction

The Burke County Board of Commissioners (BCBOC) is dedicated to enhancing the health and well-being of Burke County (BC), NC. They tasked the consultant team with identifying a key social determinant of health (SDOH) that is significantly impacting the health outcomes of their community and propose 'upstream' strategies to address the issue. The consultant team identified low health literacy related to illicit drug use among Burke County Public middle and high school students as a critical public health concern in BC. Many of these students do not perceive illicit drugs as dangerous, which may eventually contribute to the county's increasing number of drug overdose fatalities (Burke County, 2022; North Carolina Department of Health and Human Services [NCDHHS], 2023). In response, the consultant team proposes a comprehensive evidence-based intervention to increase health literacy and prevent drug use among middle and high school students to improve health outcomes.

SDOH Analysis and Recommendations

SDOH are the social, economic, and physical conditions and systems in which people are born, live, work, and age (Centers for Disease Control and Prevention [CDC], 2022a). These nonmedical factors significantly affect health, well-being, and quality of life even more than healthcare access and genetic factors (CDC, 2022a). Health literacy is a SDOH within the domain of social and community context that refers to individuals' ability to obtain, understand, and use information and services to make informed health-related decisions. Health literacy empowers individuals to critically evaluate information and adopt behaviors to improve their health (Stormacq et al., 2019).

Low health literacy among adolescents related to illicit drugs leads to inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions (Yangyuen et al., 2021). North Carolina ranks 41st out of 50 states in health literacy (North Carolina Health Literacy, 2024), and BC adolescents demonstrate a lack of awareness of substance risks, with a significant percentage viewing alcohol, vaping, and marijuana as

safe (Burke County, 2022). With one in five students in BC admitting to illicit drug use, Burke County Public Middle and High school students, aged 12-18 years, were identified as the priority population for increasing health literacy (Burke County, 2022). This focus is crucial as the drug overdose crisis disproportionately affects individuals with limited health literacy (CDC, 2023), and unintentional drug overdose mortality rates surging in BC (NCDHHS, 2021).

Contextual Analysis

The consultant team adheres to guiding values and ethical principles including collaboration, equity, justice, integrity, transparency, shared power, and evidence-based decision-making, ensuring effective, fair, and respectful policy recommendations. This proposal prioritizes health equity, by recommending evidence-based interventions that address health disparities to ensure all students have access to resources to improve health literacy related to illicit drug use. Within this process, confidentiality and privacy are prioritized in the handling of sensitive health information.

Past policies impacting health literacy in BC include North Carolina's 115C-81.20 Education Program law, which mandates alcohol and drug use prevention education from kindergarten through high school (North Carolina General Assembly, 2024), and the federal Comprehensive Addiction and Recovery Act, aiming to expand awareness and drug rehabilitative services (USC, 2016).

The issue is complex due to factors like mental health, peer and family drug use, peer pressure, drug experimentation, and punitive school policies (see **Appendix A.1**). Low health literacy can be a symptom of broader issues like poverty and education, complicating root cause identification (Healthy People 2030, 2024).

Three domains offer opportunities to change system outcomes: Information, Organization, and Mindset (Kim, 1995). In the Causal Loop Diagram, the Information leverage point (see **Appendix A.3**) demonstrates how providing accessible and accurate health literacy information about illicit drugs can reduce student drug use and prevent school suspensions, which often lead to disengagement and increased drug use (Prins et al., 2023). Investing in a comprehensive curriculum enables students to make informed decisions and resist peer pressure, thus reducing experimentation and illicit drug use (CDC, 2022b). The Organization's leverage point involves modifying punitive school policies to avoid student suspensions for drug use and ensuring continued access to preventative services and supports

(Columbia University, 2023). The Mindset leverage point emphasizes how reducing the stigma associated with drug use disorders by integrating destigmatizing language and creating supportive environments in schools and communities can encourage affected individuals to seek help (National Institute on Drug Abuse, 2023).

Stakeholders play a vital role in addressing adolescents' illicit drug use. The BCBOC is a key stakeholder with the authority to adopt policies and allocate necessary funds. The Burke County Health Department can prepare and evaluate evidence-based educational materials to ensure students are provided with accurate information and accessible resources. The Burke County Board of Education, superintendent, high school and middle school principals, and teachers play crucial roles in educating the priority population and fostering supportive school environments, engaging parents, and modifying problematic school policies to align with prevention best practices (U.S. Department of Health and Human Services et al. [HHS et al.], 2003).

Additional stakeholders like middle and high school students will provide their input to shape the intervention design and improve its reach and impact. Parent and guardian stakeholders will be engaged to reinforce educational messages and lead conversations to break the cycle of substance use disorders. Stakeholders such as healthcare providers, community organizations, law enforcement, and community leaders will be engaged to provide screenings, counseling, and referrals, revise policies, enhance harm reduction prevention strategies, and disseminate information.

The BCBOC should prioritize methods to advance collaboration among community stakeholders to prepare and evaluate an accessible and locally relevant drug prevention health literacy program to enhance students' abilities to evaluate substance-related information, understand risks, and reduce illicit drug use.

Recommendation for Action

We recommend the consultant team lead an experience-based codesign (EBCD) effort to generate relevant solutions. EBCD is the most appropriate co-design process to formulate potential solutions for this issue because it uses a narrative-based approach with service design methods to enable the service users, BCPS middle and high school students, to leverage their experiences to cocreate solutions with relevant community stakeholders (The Point of Care Foundation, n.d.).

To address the SDOH, we recommend an engagement strategy prioritizing collective action through collaboration, transparency, building trust, equitable representation, addressing power imbalances, leveraging social networks, student-centered materials, interactive programs, peer leadership, parental involvement, and forming a steering committee to guide health literacy efforts and ensure accountability (Hart & Ksir, 2019). Implementation of systems such as establishing success metrics, feedback channels, conflict resolution practices (Piryanı & Piryanı, 2019), and transparent decision-making processes will foster a culture of accountability and sustained success (GGI Insights, 2024).

We recommend the BCBOC adopt policies and allocate funds to implement an evidence-based drug abuse prevention community program. After a comprehensive review and evaluation of multiple drug prevention programs, Project STAR (Students Taught Awareness and Resistance) represented one of the most effective strategies to enhance health literacy and prevent drug abuse among our adolescents (Substance Abuse and Mental Health Services Administration [SAMHSA], 2019). Project STAR is a multifaceted program that brings together schools, parents, the media, community leaders, and policymakers and has demonstrated effectiveness in reducing alcohol consumption, smoking (SAMHSA, 2019), amphetamine use (Göçmen et al., 2021), and illicit drug use in other communities, with these effects lasting into adulthood (HHS et al., 2003). The estimated cost for training and curriculum materials is \$175,000 (National Institute of Justice [NIJ], 2012). While Project STAR requires an initial investment in training, program delivery, and evaluation, its long-term benefits outweigh the costs (NIJ, 2012).

The program is designed to be implemented over a three- to five-year period and includes the implementation of a curriculum for middle and high school students by trained teachers as part of classroom instruction and peer leadership. Parents are involved through activities such as homework assistance, family communication skill-building, and community engagement (Chou et al., 1998). At the community level, community leaders, school districts, and law enforcement will champion prevention-focused policies. The school district will review its punitive drug use disciplinary policy to ensure that youth struggling with substance use have a supportive environment free of stigma and ongoing access to prevention resources. Mass media will be leveraged to amplify our anti-drug message, encourage the use of resources, and reduce stigma (Chou et al., 1998).

The success of Project STAR depends on identifying and evaluating key priority areas for improvement over time. The consulting team recommends using the Plan-Do-Study-Act (PDSA) framework for evaluation (Hughes, 2008). The intervention should be tested on a small scale in one middle school before district-wide implementation. A survey tool will be used to collect data to measure the increase in health literacy related to illicit drugs among the participating students including measuring the rate of use of illicit drugs, knowledge of drug-related risks, and the age of first use. Additional areas to evaluate include the implementation of the curriculum, the effectiveness of active learning techniques and peer leaders, the level of program awareness and involvement, the effectiveness of the parent component, and the impact of mass media messaging. The number of teachers and students trained, the number of schools implementing the program, and a cost-benefit analysis are also important. Data analysis will be conducted to identify ways to strengthen the program and ensure continuous improvement.

Conclusion

The consultant team recommends the BCBOC adopt policies and allocate funds to engage a coalition of community stakeholders to implement the Project STAR prevention program to increase health literacy related to illicit drug use among Burke County Public Middle and High School students. The program's implementation should be guided by an engagement and accountability plan and a comprehensive leadership framework. By leveraging these recommendations, the BCBOC will improve health and well-being in the county by addressing a critical aspect of its social and community context.

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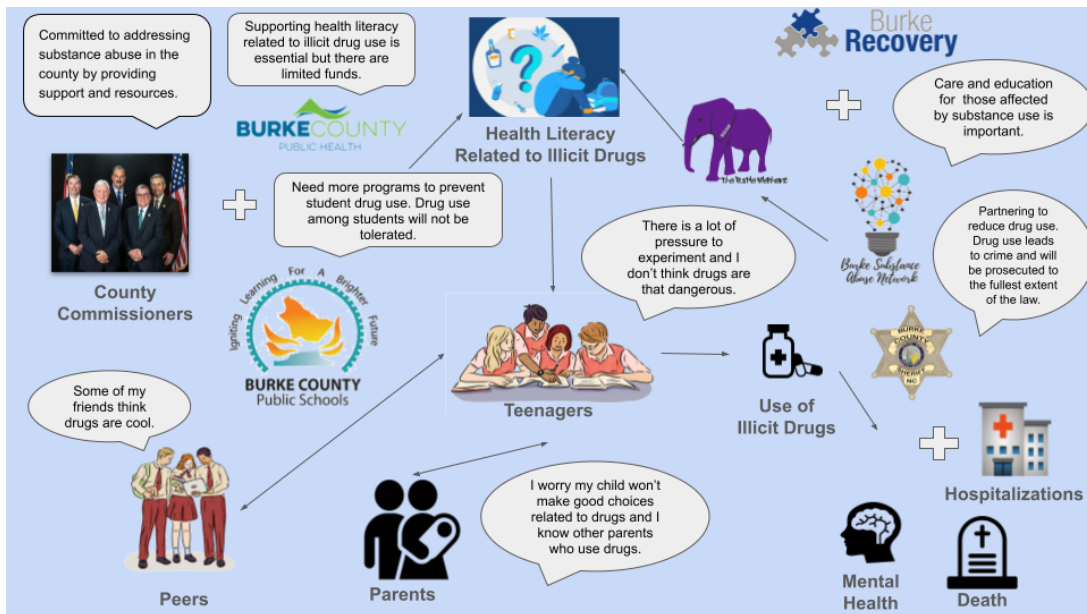
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APPENDIX A: GROUP DELIVERABLES

APPENDIX A.1: BURKE COUNTY STUDENT HEALTH LITERACY RICH PICTURE



APPENDIX A.2: GROUP PRESENTATION

IMPROVING THE SOCIAL AND COMMUNITY CONTEXT OF PUBLIC MIDDLE AND HIGH SCHOOL STUDENTS IN BURKE COUNTY, NORTH CAROLINA THROUGH INCREASING HEALTH LITERACY RELATED TO ILLICIT DRUG USE

The County Catalysts

Molen Alfaro Barrameda, Jeff Cineas, Mandolin McConaha, Ahmad Fahim Pirzada, and Mason Zeagler



Slide 1, *Mason Zeagler*

Hello, everyone! Thank you for attending our presentation. It is titled, "IMPROVING THE SOCIAL AND COMMUNITY CONTEXT OF PUBLIC MIDDLE AND HIGH SCHOOL STUDENTS IN BURKE COUNTY, NORTH CAROLINA THROUGH INCREASING HEALTH LITERACY RELATED TO ILLICIT DRUG USE."

Introduction



Mason Zeagler



Jeff Cineas



Mandolin McConaha



Ahmad Fahim
Pirzada



Molen Alfaro
Barrameda

The County Catalysts



Slide 2, *Mason Zeagler*

This is our team! As the County Catalysts, we've collaborated over the course of this semester, and each of us brought different backgrounds and perspectives to this project.

Presentation Agenda

Methods

Overview of SDOH

Insights & Recommendations (Conc. Deliverables 1 and 2)

Conclusion

Q&A



Slide 3, *Mason Zeagler*

Here is a summary of our presentation.

I will explain the methods we used to analyze the social determinants of health and develop recommendations.

Next, Jeff will provide an overview of the social determinants of health in Burke County.

Then, Mandolyn, Fahim, and Molen will summarize the insights and recommendations we synthesized to increase health literacy related to illicit drugs among these students.

At the end of their remarks, we will conclude the presentation and moderate a brief question and answer session.

Methods

Domains of Social Determinants of Health



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(Centers for Disease Control and Prevention, 2023)

Slide 4, Mason Zeagler

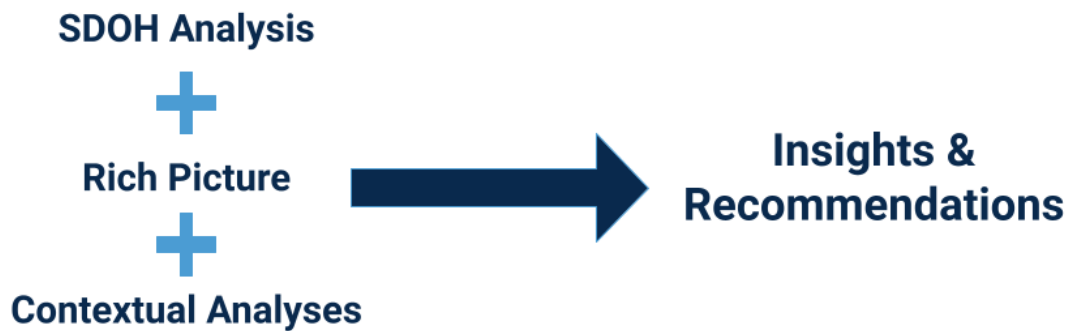
It was requested our team focus on ‘upstream’ efforts to address social determinants of health within the domain of social and community context (the one in yellow) to realize long-term, downstream improvements in community health.

This domain specifically focuses on how people’s relationships and interactions with family, friends, co-workers, and community members impact their health and well-being.

It was also requested that we select a specific social determinant of health as defined by Healthy People 2030, which sets data-driven national objectives to improve health and well-being over the next decade.

Based on the available county-level data and goals listed within this domain, we focused on increasing the health literacy of the population, specifically health literacy related to illicit drugs among Burke County Public middle and high school students.

Methods



Slide 5, Mason Zeagler

We began by analyzing the social determinants of health.

We then created a rich picture and conducted a series of contextual analyses to understand why BCPS middle and high school students demonstrate low health literacy related to illicit drugs.

We used the insights produced from these tools and analyses to tailor our recommendations to meet the needs of this population and health issues in Burke County.

I will now turn it over to Jeff, who will share more information about why improving this health issue is so important for Burke County.

Overview of SDOH

Evidence of Low Health Literacy from the 2019 BCPS Middle and High School Pride Survey

12.5 years old
average age of first time substance use



1 out of 3
BCPS middle and high school students
do not think drinking alcohol is dangerous

40 percent
of BCPS middle and high school students
do not think vaping is dangerous



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GLOBAL PUBLIC HEALTH

Slide 6, Jeff Cineas

Health literacy is quite low in North Carolina. North Carolina ranks 41st in health literacy compared to other states, with 25 percent or more of residents in each Burke County census tract having basic or below basic health literacy, which means they may be able to locate information in simple texts but struggle with complex health information. Low health literacy among adolescents related to illicit drugs leads to inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions.

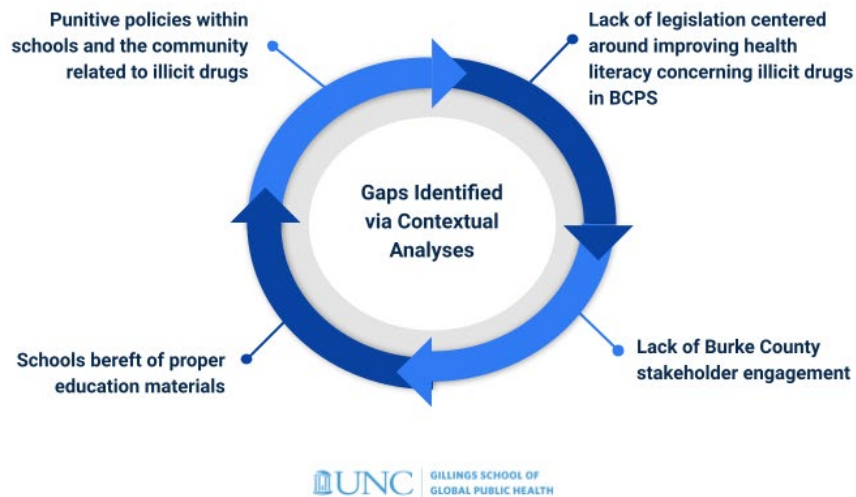
In **recent years** Burke County has had an insurgence of drug-related deaths. The 2022 Burke Community Health Assessment states that “Burke County was ranked second as the county with the most drug overdose deaths from 2012 to 2019.”

On this slide, we have some of the startling statistics from the 2019 Pride survey of Burke County Public Middle and high school students. The data revealed the following:

- The average age of first-time use in Burke County is 12.5 years old.

- 1 out of 3 students in Burke County do not think drinking alcohol is dangerous.
- Almost 40 percent of students in Burke County do not think vaping is dangerous.
- Almost half of the students in Burke County do not think marijuana is dangerous.
- 1 out of 5 students in Burke County have admitted to using illicit drugs.

Overview of SDOH



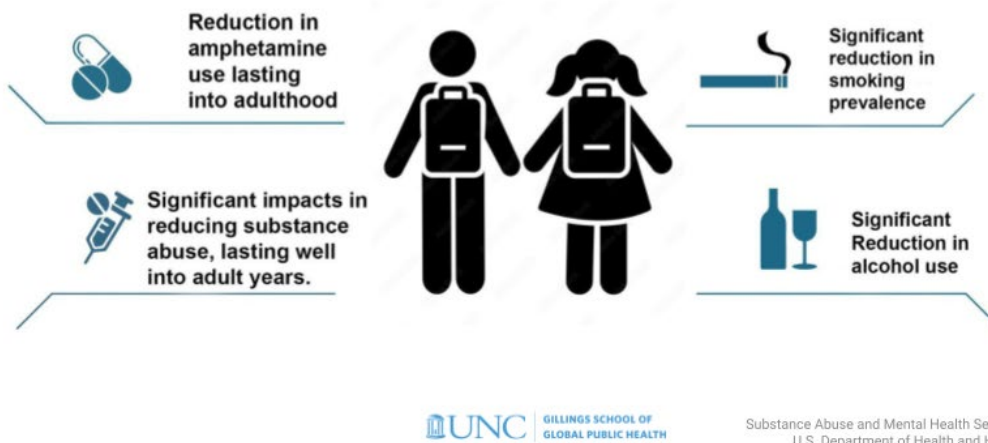
Slide 7, Jeff Cineas

Our contextual analyses showed that:

- North Carolina law mandates that the development and implementation of alcohol and drug use prevention is a part of the curriculum from kindergarten through high school. However, there's still a lack of policy/responsibility of schools to teach about illicit drugs. Research indicates that low health literacy among adolescents related to illicit drugs can contribute to developing an inadequate understanding of their associated health risks.
- Some policies mandate the development and implementation of alcohol and drug use prevention, as a part of the curriculum from kindergarten through high school in North Carolina but they are not sufficient enough to help decrease the social gaps identified.
- BCHD should focus on how community stakeholders can collaborate to create relevant educational materials and informational sessions to increase the health literacy of BCPS middle and high school students.
- There are punitive policies (suspensions) within schools and the community which lead to students becoming disengaged and increased drug use related to illicit drugs.

Insights & Recommendations

Project STAR Prevention Program



Slide 8, Mandolin McConaha

We have the opportunity to make a significant impact on the issue of adolescent substance use by implementing Project STAR in Burke County. After a comprehensive review and evaluation of multiple drug prevention programs, we believe Project STAR is the most effective strategy to enhance health literacy related to illicit drugs and prevent drug abuse among our teens.

Project STAR is not just a program, but a community-wide movement that brings together schools, parents, the media, community leaders, and policymakers. It has demonstrated significant success in other communities in reducing alcohol consumption, smoking, amphetamines, and illicit drug use, with these effects lasting into adulthood.

Insights & Recommendations

Project STAR Prevention Program

- **School-based Curriculum**
- **Policy Change**
- **Parent Involvement**
- **Community Engagement**
- **Media Campaign**

Program Settings	Information	Skills Development	Methods	Impacts
Community	Drug Trends	Social Skills	Media Campaign Policy Change	Stigma & Harm Reduction
School	Drug Effects	Resistance Skills	Prevention Curriculum Policy Change	Drug Use Reduction
Family	Drug Abuse Symptoms	Parenting Skills	Communication Parent-School Collaboration	Parent Engagement & Support



(Substance Abuse and Mental Health Services Administration, 2019;
U.S. Department of Health and Human Services et al., 2003)

Slide 9, Mandolin McConaha

Project STAR empowers teens aged 12-18 to make informed decisions. This age group is at a critical stage because teens are highly susceptible to peer pressure and experimentation with illicit drugs, and this project is crucial for guiding them.

This program offers a robust, two-year school-based curriculum, facilitated by trained teachers and student peer leaders. This curriculum is designed to foster a culture of prevention, equipping our students with the knowledge they need to resist substance use.

What sets STAR apart is its commitment to policy reform and parental involvement. We believe in the power of community and understand that parents and community stakeholders play a crucial role in shaping a healthier future for our children. That is why parents and community stakeholders are actively involved in shaping policies and strategies that align with prevention best practices.

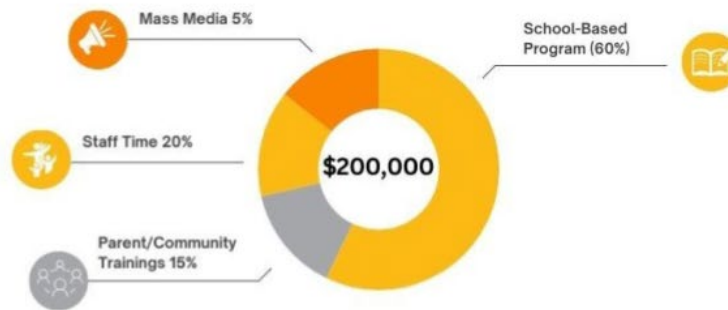
For Example, in Burke County Public School, this program will review and strengthen policies to ensure that struggling youth have a supportive environment and access to prevention resources.

At the community level, stakeholders and community leaders will review and strengthen policies related to healthcare access, treatment, law enforcement, community resources, and crisis response services to promote full community alignment.

Additionally, this program leverages the power of mass media to amplify our anti-drug message, encourage the use of resources, and reduce stigma.

Insights & Recommendations

Program Costs



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(National Institute of Justice, 2012)

Slide 10, Mandolin McConaha

While STAR requires an initial investment in training, program delivery, and evaluation, its long-term benefits outweigh the costs. We've done a thorough cost analysis and found that the estimated cost per participant is \$74 and approximately \$175,000 for over a 3-year period which includes teacher, parent, and community leader training, as well as curriculum materials for the school-based program.

Project Star is the foundation of our policy recommendation and is an investment in the future of our community. I will pass it to Fahim to talk about execution.

Insights & Recommendations

Engagement Plan

Accountable Partners	Why to Involve	How to Involve
County Commissioners	Prioritize the Project; Provide Funding	Meetings; Emails
School District Board	Coordination between partners	Meetings; Emails
School Administrators	Project oversight; Provide resources and support	Workshops; Meetings; Emails, Events
Teachers	Deliver curriculum; Facilitate discussion; Identify students in need	Training; Integrate drug education into lessons; Emails; Events
Students	Peer education; Leadership Role	Peer-led campaign and education



Slide 11, Ahmad Fahim Pirzada

As discussed by my team member, Mandy, Project STAR is the foundation of our recommendation for increasing health literacy related to illicit drug use among the students in Burke County which requires several community partners' engagement.

The table shows some of the accountable community partners with the reasons and methods of engagement. For example, County Commissioners should engage to prioritize the project and provide funding. They can engage with other partners through meetings and emails.

As a target population, students should engage to promote drug-free lifestyles, organize peer-led education initiatives, and create safe spaces for all students to discuss drug-related issues. Students can engage through campaigns and individual and group education.

Insights & Recommendations

Accountability Plan: Performance Measures “STAR Program”



Slide 12, Ahmad Fahim Pirzada

The four performance measures ensure accountability in our proposed project. The project staff can assess the effectiveness of the “STAR Program” through a comprehensive set of measures that include process, output, outcome, and balancing metrics.

These measures aim to evaluate the project’s reach and success in achieving its goals.

- Process measures track changes made to increase health literacy and decrease illicit drug use.
- Output measures focus on quantifiable results such as producing educational materials, completing Pride surveys, and developing personalized drug cessation plans.
- The outcome measures the project’s impact on student’s health literacy and behaviors related to illicit drug use.
- While balancing measures of parental complaints and financial implications, aiming to capture the wider consequences of implementing the program.

Insights & Recommendations

Leadership Framework



(Canadian College of Health Leaders, 2024)

Slide 13, Molen Barrameda

The LEADS framework, which stands for Lead Self, Engage Others, Achieve Results, Develop Coalitions, and Systems Transformation is a comprehensive and innovative strategy that describes the actions and traits that effective leaders use to bring about change in individuals, groups, and the whole system. There are 5 domains of action, and I will mention some leadership skills associated with our proposed intervention.

Lead Self: Leadership education and development should include health literacy management skills that promote self-awareness, emotional intelligence, and personal growth.

Engage Others: Promote an open exchange of ideas and information through the right channels of communication by engaging all stakeholders through public school campaigns and community-based campaigns to improve health literacy and reduce disparities among the target population.

Achieve Results: By integrating organizational mission, vision, and goals with reliable, valid evidence to make decisions, thereby increasing the target population's health literacy related to drug use.

Develop Coalitions: By collaborating with public school systems to embed health literacy learning objectives within the curriculum through education integration. This builds trust and a sense of shared meaning.

Systems Transformation: To foster constant improvement and creativity, our group (County Catalysts), proposes the adoption of Project Star, which is a comprehensive, multi-faceted drug abuse prevention initiative that empowers students to learn about illicit drugs and reduce drug use.

Conclusion



Project STAR



Engagement & Accountability Plan



Leadership Framework

Slide 14, Mason Zeagler

Ultimately, our recommendation is the Burke County Board of Commissioners should adopt policies and allocate funds to address low health literacy related to illicit drugs among BCPS middle and high school students.

Based on a series of analyses, we recommend the commissioners implement Project STAR and use an engagement and accountability plan and the LEADS leadership framework to guide its implementation.

Using these tools will result in students having improved connections with community partners and resources, understanding of illicit drugs and the risks they pose, and health outcomes.

With the time we have remaining, we will answer your questions.

Questions?



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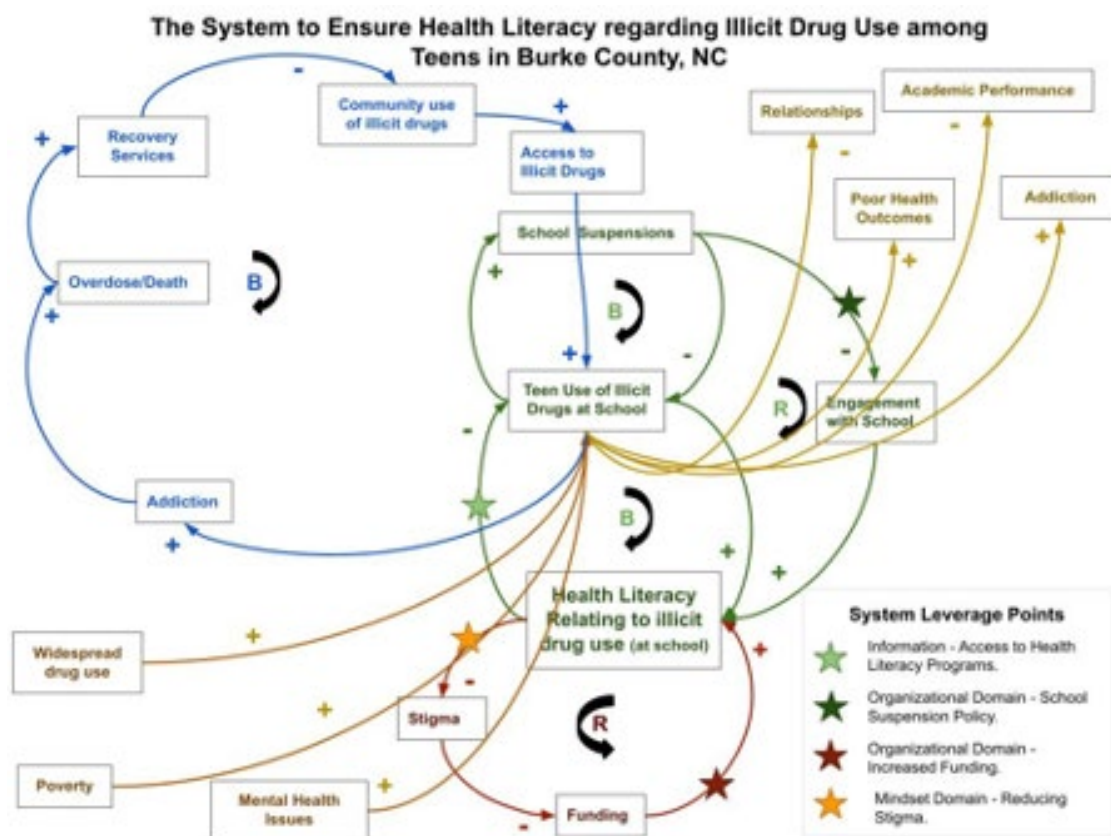
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APPENDIX A.3: CAUSAL LOOP DIAGRAM



APPENDIX B: MOLEN ALFARO BARRAMEDA INDIVIDUAL DELIVERABLES

APPENDIX B.1: SOCIAL DETERMINANTS OF HEALTH ANALYSIS

Introduction

The World Health Organization's Commission on the Social Determinants of Health has defined Social Determinants of Health (SDOH) as "the circumstances in which individuals are born, develop, reside, labor, and age and the underlying factors that shape these circumstances." The term "social determinants" commonly refers to aspects such as the health-related characteristics of neighborhoods, such as the ease of walking, the availability of recreational places, and the accessibility of healthy foods. These factors have the potential to impact health-related behaviors. Substantial evidence indicates that socioeconomic factors, including money, wealth, and education, are the underlying determinants of various health outcomes (Braveman & Gottlieb, 2014). Several social determinants of health (SDOH) have been linked to a higher likelihood of Illicit drug use (see **Appendix B.1.A**). Illicit drug use refers to the use and abuse of drugs that are illegal or under government control such as cocaine, inhalants, heroin, methamphetamines, hallucinogens, or ecstasy (*High Risk Substance Use in Youth | Adolescent and School Health | CDC*, n.d.).

SDOH plays a significant role in developing health disparities and inequities (*Social Determinants of Health | NCHHSTP | CDC*, n.d.). Low socioeconomic status (SES) people have trouble getting excellent health care, preventive programs, and mental health resources. Lack of insurance, transportation, and finances delay medical care. Furthermore, health literacy has been recognized as a factor influencing health disparities and social determinants of health. Low health literacy is associated with inadequate familiarity and comprehension of health conditions and services and difficulty in executing suitable self-care. practices, struggle to comprehend medication instructions and follow treatment plans, decrease in the usage of preventive care and services, rising rates of hospital admissions escalating healthcare expenses and adverse health effects, and higher death rates (Vernon et al., n.d.). High-risk substance use, including illicit drug use, has a significant likelihood of leading to negative consequences, such as injury, engagement with the criminal justice system, dropping out of school, or even loss of life. Teenagers and young adults are more likely to have long-term physical and mental illnesses, have worse

general health and well-being, and may become addicted (National Center on Drug Abuse Statistics, 2023).

Geographic and Historical Context

Burke County is situated in the western central part of North Carolina's mountainous region. Its population is approximately 90,000 individuals and a varied economy encompassing industrial goods produced by technology, furniture, medical, chemical, machine components, and textile industries. As of 2023, Racial demographics comprise 80.8 percent Non-Hispanic White; 6.9 percent Hispanic; 6.5 percent Black, non-Hispanic; 3.8 percent Asian, 1 percent American Indian, and .8 percent Native Hawaiian or other Pacific Islander (County Health Rankings & Roadmaps, 2023).

The well-being of a location is determined by the historical and current policies and practices implemented. Burke County, like the rest of the United States, has been inhabited by numerous Indigenous nations for thousands of years. Due to the broad extent of these parks and forest holdings, the United States government, and the state of North Carolina rank among the top three largest landowners in the county (County Health Rankings & Roadmaps, 2023).

Despite the richness of the land, poverty has not been excluded from Burke County. The federal poverty level (FPL) is a measure that assesses an individual's or family's income to a predetermined poverty threshold, which represents the minimal amount of money required to meet essential needs. From 2017 to 2020, around 42 percent of the population in Burke County lived below 200 percent of the Federal Poverty Level (FPL), which is nearly half of the entire population (Institute for Research on Poverty, n.d.). According to Healthy NC 2030 (HNC 2030), this figure surpasses the current state percentage of 36.8 percent (North Carolina Institute of Medicine, 2021). Homes with inflated costs compared to income, overcrowding, or poor maintenance also pose health risks. 19.6 percent of Burke County households allocated 30 percent or more of their income to housing between 2013 and 2017. Access to affordable, high-quality housing is essential for maintaining health and well-being, preventing people from sacrificing essential purchases like food, healthcare, and preventative care to pay for their homes (North Carolina Institute of Medicine, 2021). Burke County remains committed to enhancing accessible transportation but access to local farmer's markets, employment opportunities, local parks and recreation centers, and other destinations is also limited (Greenway Public Transportation, n.d.).

Priority Population / Measure of SDOH

Our priority population is the Burke County Public middle and high school students (aged 12-18 years). The county consists of five public middle schools and five public high schools, with a combined enrollment of 2,508 middle schoolers and 3,763 high school students for the 2022-2023 academic year (*North Carolina School Report Cards*, n.d.).

Substance use disorder which includes illicit drug use has consistently been among the top three priority health issues in Burke County, NC for the past 6 years. Burke County ranked second statewide for having the highest number of drug overdose deaths from 2012 to 2019. There were thirty-two drug overdose deaths per 100,000 people in Burke County, North Carolina in 2018-2020. In 2021, there are a total of 656 cases of drug abuse, 642 in 2022, and 600 in 2023 (*DATA DASHBOARD | BSAN*, n.d.).

The Pride survey was conducted in 2019 among middle and high school students from Burke County Public Schools. Based on the data, the following findings were observed: the average age of initial use in Burke County is 12.5 years old. Approximately one-third of students in Burke County hold the belief that drinking alcohol is not a risky behavior. Close to 40 percent of students in the county do not perceive vaping as a dangerous activity. Nearly half of the students in Burke County do not consider marijuana to be a hazardous substance. Lastly, one in five students in Burke County has openly acknowledged their use of illicit drugs (Burke County, 2022).

Approximately 25 percent of the American population has low health literacy. Among that group, nearly one-third reported their physical health as "fair" or "poor," a significantly higher percentage compared to the overall population. According to a study conducted by Vernon et al. in 2007, the economic impact of low health literacy in the United States is estimated to range from \$106 billion to \$238 billion annually (Vernon, Trujillo, Rosenbaum, & DeBuono, 2007). North Carolina is ranked 41st among all the states. Certain demographic groups, such as older adults, the medically underserved, and individuals with low socioeconomic status, tend to have lower health literacy levels (North Carolina Institute of Medicine, 2007).

Rationale

To support vulnerable youth groups in Burke County who are more likely to use drugs and experience negative consequences from them, preventative programs can effectively target the

underlying causes of illicit drug use by addressing the SDOH such as low health literacy. Incorporating research-based programs such as health literacy best practices into middle and high school curricula by collaborating with local health systems, school districts, and community-based organizations will empower them to advocate for their health by making informed decisions. Initiatives may enhance long-term positive health outcomes designed expressly to raise health literacy among these groups. Burke County (BK) falls into the lower middle group, which includes people who are between 25 and 50 percent in terms of positive health outcomes (see **Appendix B.1.B**). Considering the updated definitions of personal and organizational health literacy in Healthy People 2030, healthcare providers and institutions must put policies into place that will improve the clarity and usability of health information and healthcare systems, ultimately leading to the advancement of health equity (Santana et al., 2021).

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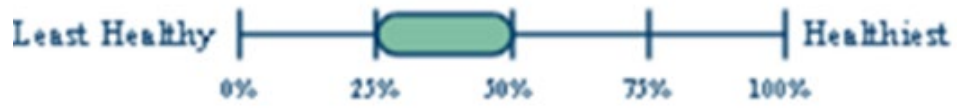
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APPENDIX B.1.A: THE SOCIAL DETERMINANTS OF HEALTH INFLUENCE SUBSTANCE USE RISK

THE SOCIAL DETERMINANTS OF HEALTH INFLUENCE SUBSTANCE USE RISK



APPENDIX B.1.B: HEALTH OUTCOMES, BURKE COUNTY



APPENDIX B.2: CONCENTRATION DELIVERABLE 1: ENGAGEMENT

Introduction

Social determinants of health (SDOH) are the social, economic, and physical conditions and systems in which people are born, live, work, and age (Centers for Disease Control and Prevention [CDC], 2022). These nonmedical factors significantly affect health, well-being, and quality of life, even more than healthcare access and genetic factors (CDC, 2022). Health literacy is an SDOH within the domain of social and community context that refers to individuals' ability to obtain, understand, and use information and services to make informed health-related decisions. Health literacy empowers individuals to critically evaluate information and adopt behaviors to improve their health (Stormacq et al., 2019). Low health literacy among adolescents related to illicit drugs leads to inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions (Yangyuen et al., 2021). North Carolina ranks 41st out of 50 states in health literacy (North Carolina Health Literacy, n.d.), and Burke County adolescents demonstrate a lack of awareness of substance risks, with a significant percentage viewing alcohol, vaping, and marijuana as safe (Burke County, 2022). With one in five students in Burke County admitting to illicit drug use, Burke County Public Schools (BCPS) middle and high school students, aged 12-18 years, were identified as the priority population for increasing health literacy (Burke County, 2022). This focus is crucial as the drug overdose crisis disproportionately affects individuals with limited health literacy (CDC, 2023), and unintentional drug overdose mortality rates surging in Burke County (NCDHHS, 2021).

Community Partner Mapping – Approach & Output

The National Association of County and City Health Officials (NACCHO) endorses community-driven strategic planning called Mobilizing for Action through Planning and Partnerships (MAPP). It helps communities analyze their most pressing population health challenges and link resources across sectors for strategic action to achieve health equity. Broad participation, community engagement, policy reform, and resource alignment toward common goals are crucial to MAPP. The method produces a Community Health Needs Assessment (CHNA) and Community Health Improvement Plan (CHIP). Updated MAPP 2.0 provides step-by-step direction, assessment tools, and community health improvement resources by empowering communities to prioritize health, establish strategies, and build partnerships to enhance

health outcomes, promoting sustainable and equitable solutions for the well-being of their populations (NACCHO, n.d.).

Improving health literacy among public middle schools and high schools aged 12-18 presents a unique opportunity in twenty-first-century Burke County. The Burke County Health Literacy Community Catalysts (BCHLCC), which was created by the Steering Committee, will bring together community-based organizations, public middle and high school administration, and local health systems to develop and implement health literacy best practices. This will be especially helpful for public middle and high school students who use illicit drugs. The goal of the BCHLCC is to work with local communities to find ways to boost health literacy thereby empowering students to take a proactive role in advocating for their well-being.

Community Partners and Rationale for Inclusion

1. **Burke County Public Middle School and High School students aged 12-18 years old.**

Substance use disorder has been one of Burke County's top three health issues for six years. From 2012-2019, Burke County was one of two NC counties with the highest drug overdose death rate in the western area, according to Healthy Communities, NC (BSAN, n.d.). In the 2019 Pride survey, the study showed that the average age of first-time substance use is 12.5 years old, and 1 out of 5 students has admitted to using illicit drugs (Burke County, 2022). Because they exhibit low health literacy related to illicit drugs, a robust evidence-based health literacy intervention is necessary. The population who are directly affected by their knowledge and real-life experiences are these people. This sector's view is important because they are the ultimate end-users of the program and might alter how it works (Bethell, 2013). Resources, information exchange, calls to action, and effective interventions that produce desired and long-lasting improvements are things they are interested in.

2. **Parents** who have children with drug use disorders often face big problems and are not given enough attention. Children whose parents suffer from substance use disorder (SUD) are more likely to have a worse socioeconomic level, struggle more in social and academic contexts, and experience issues in their families (Center for Behavioral Health Statistics and Quality, 2017). For these kids, lack of resources at home can have both direct and indirect effects, such as family

abuse or neglect. Parents are often forgotten as stakeholders, even though their drug use can have serious effects on their kids' health and well-being (Center for Behavioral Health Statistics and Quality, 2017). About 1 in 35 children (2.1 million) lived in households with at least one parent who had a past year illicit drug use disorder (see **Appendix B.2.A**). To help families stay healthy and stop the cycle of substance use disorders, it is important to see and address these problems by increasing health literacy.

3. Local health departments like **Burke County Health Department** may actively promote and enhance health education programs and equip them with the necessary skills to make well-informed decisions regarding their well-being. The Language and Cultural Services department strives to offer health information services that are culturally and linguistically appropriate. Ensuring accessibility of health materials to diverse populations, irrespective of language or cultural background, is of utmost importance. Health departments work together with community organizations, schools, and other stakeholders to develop guidance and formulate policies that encourage health literacy. Through collaboration, there is potential to enhance accessibility to precise health information and services (U.S. Department of Health and Human Services, Office of Burke County Public Schools (Middle Schools and High Schools).
4. **Public Schools** educate children, develop life skills, and create a drug-free atmosphere, all of which substantially impact health literacy (U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2010). Schools can collaborate with parents, medical experts, and local authorities to identify students who exhibit behavioral risks for drug-related issues, refer students to their medical homes, and employ beneficial programs. Their endeavors are crucial in the fight against teen drug addiction (U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2010).
5. **Law Enforcement Officers** are crucial to combating illegal drug use. Their efforts are vital in safeguarding communities from the negative effects of illegal substances. They partner with other organizations, including social workers and mental health specialists to enhance drug use prevention strategies (US Department of Justice, National Institute of Justice (NIJ), 2019). Harm reduction is a method that has been shown to work and is particularly important for helping people

who use drugs. It places a strong emphasis on interacting directly with drug users to improve physical, mental, and social well-being, reduce the risk of overdose and the spread of infectious diseases, and provide low-barrier options for obtaining health care services, such as treatment for substance abuse and mental health disorders (*Harm Reduction*, n.d.).

6. Founded in 1988, the **Burke Literacy Council** is a nonprofit organization. Their goal is to develop a commitment to lifelong learning in everyone they serve while teaching people and their families how to read and/or improve their literacy skills (Burke Literacy Council, n.d.). Literacy and health literacy are intertwined. By fostering both, we empower individuals to make informed choices, reduce substance abuse, and improve overall well-being. Through the partnership, health literacy can be improved in the community and volunteers can be tapped to help train educators in equipping students with literacy skills.
7. **The Burke Substance Abuse Network** is an alliance of providers, support groups, affiliated agencies, and other stakeholders who collaborate to (a) establish connections, (b) recognize deficiencies in service, and (c) strategically devise solutions to address community needs on the mitigation of substance abuse and utilization among youth, young adults, their families, and all residents of Burke County, NC, to promote long-term community well-being.
8. **Burke County Commissioners** have the power to prioritize health literacy among the students and allocate required funds. They actively contribute to fostering health literacy, ensuring that residents have the knowledge and skills needed for healthier lives (Burke County Health Department, 2023).

Two factors that may influence the equitable representation and participation of identified key partners in the task force:

- **Cultural Competence and Sensitivity:** Cultural differences affect health information perception and preventative measures engagement. Culturally competent community leaders, educators, and health workers are essential to understanding varied cultural norms, beliefs, and practices to help adapt health literacy initiatives. Language limitations can limit participation. Multilingual materials ensure inclusivity. (Tulane University School of Public Health, 2023).

- **Power dynamics and structural barriers** impact partnership decision-making and resource allocation. These disparities must be addressed for equitable representation. The main goals should be to create accessible platforms, push for policy reforms, and empower marginalized communities (Andress et al., 2020).

Reflections and Conclusions

While acknowledging the need for change, they can leverage the existing structure to their advantage to initiate the work. We encourage the participation of experienced leaders in Burke County Health Department and public systems in aiming for quality improvement. The work should be guided by a commitment to educate all stakeholders about health literacy, foster a culture of shared decision and collaboration with community leaders, and empower stakeholders to develop interventions based on the needs of their community. Analysis of inadequate health literacy yields useful insights but requires sensitivity, context awareness, and multiple approaches to overcome its limits (Sørensen et al., 2012). Assuring health literacy's generalizability and validity across contexts while acknowledging its context- and content-dependency may be the most conceptual challenge. Targeted interventions can meet vulnerable population needs including low health literacy. Health literacy research and intervention should focus on children and youth because they acquire cognitive, physical, and emotional abilities and health-related behaviors (Borzekowski, 2009). These phases of life are critical for optimal development and adult health and well-being (Irwin, Siddiqi, & Hertzman, 2007), (Marmot et al., 2008). Health literacy is a lifelong learning process that begins in early childhood (Zarcadoolas et al., 2005). Children and youth can be targeted with health literacy interventions to promote healthy behaviors and reduce future health risks.

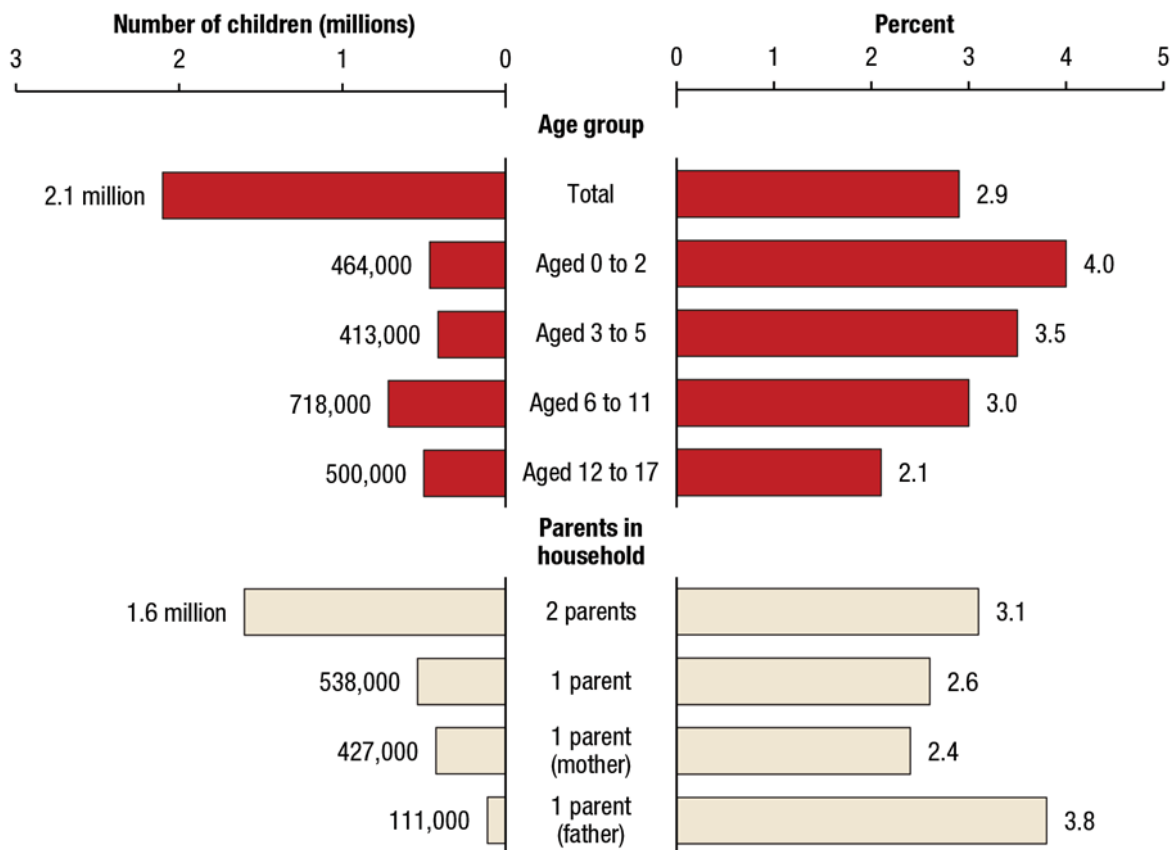
Understanding low health literacy enables health providers to tailor communication techniques. Visual aids, simplified language, and interactive forms assist comprehension. Improving health literacy leads to better health outcomes (8 Ways to Improve Health Literacy, 2014).

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APPENDIX B.2.A: NUMBER AND PERCENTAGE OF CHILDREN AGED 17 OR YOUNGER LIVING WITH AT LEAST ONE PARENT WITH A PAST YEAR ILLICIT DRUG USE DISORDER, BY AGE GROUP AND HOUSEHOLD COMPOSITION: ANNUAL AVERAGE, 2009 TO 2014



Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

APPENDIX B.3: CONCENTRATION DELIVERABLE 2: LEADERSHIP

Introduction

Social determinants of health (SDOH) are the social, economic, and physical conditions and systems in which people are born, live, work, and age (Centers for Disease Control and Prevention [CDC], 2022). These nonmedical factors significantly affect health, well-being, and quality of life, even more than healthcare access and genetic factors (CDC, 2022). Health literacy is an SDOH within the domain of social and community context that refers to individuals' ability to obtain, understand, and use information and services to make informed health-related decisions. Health literacy empowers individuals to critically evaluate information and adopt behaviors to improve their health (Stormacq et al., 2019).

Low health literacy among adolescents related to illicit drugs leads to inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions (Yangyuen et al., 2021). North Carolina ranks 41st out of 50 states in health literacy (North Carolina Health Literacy, n.d.), and Burke County adolescents demonstrate a lack of awareness of substance risks, with a significant percentage viewing alcohol, vaping, and marijuana as safe (Burke County, 2022). With one in five students in Burke County admitting to illicit drug use, Burke County Public Schools (BCPS) middle and high school students, aged 12-18 years, were identified as the priority population for increasing health literacy (Burke County, 2022). This focus is crucial as the drug overdose crisis disproportionately affects individuals with limited health literacy (CDC, 2023), and unintentional drug overdose mortality rates surging in Burke County (NCDHHS, 2021).

Overview

Improving health literacy related to illicit drugs among Burke County public middle and high school students requires strong leadership and stakeholder engagement. The stakeholders need to offer collaborative leadership to improve health literacy related to drug use among the target population. Collaborative leadership involves leaders from various sectors working together to make decisions and ensure the success of their organization (Joubert, 2019).

Effective leadership involves a combination of these strategies. By embracing diverse leadership approaches, we can create a more inclusive and equitable landscape for advancing population health.

The steering committee created by the stakeholders would guide the efforts to improve health literacy related to drug use among the students. Their vision is to create a future where every Burke County Public Middle and High School student possesses robust health literacy, enabling them to understand, evaluate, and make informed choices regarding illicit drug use. They will use a powerful framework called SMART goals for setting objectives that are clear, trackable, and achievable (Leonard, 2022). SMART goals stand for:

Specific: Clearly specified and unambiguous. Measurable: With criteria to track your target progress. Achievable: Possible to accomplish. Realistic: Possible and relevant to your life. Timely: A concise timeline with a start and end date to induce urgency. The project will be titled “Knowledge is Power: Increasing Health Literacy to Promote Drug-Free Schools and Save Lives in Burke County.” Through “Knowledge is Power,” the Burke County Health Department (BCHD) will create and lead a program that leverages evidence-based educational materials and strategies and connects students with community partners and resources to increase their health literacy related to illicit drugs (see **Appendix F.2.C**). By July 2025, BCHD will decrease the number of students who do not believe illicit drugs are dangerous by 50 percent and complete an evaluation of the educational materials utilized during the program.

Program Goals and Objectives:

Goal 1: Develop an Evidence-Based Health Literacy Curriculum

Objective 1.1: Design a comprehensive curriculum that covers the risks, consequences, and alternatives to illicit drug use, incorporating the latest research and educational methodologies within six months of the start of the project (one to six months).

Objective 1.2: After the curriculum development, conduct teacher training programs within three months to ensure educators are well-equipped to deliver the health literacy curriculum effectively, fostering engaging and informative classroom discussions (from six to nine months).

Goal 2: Establish a Supportive School Environment

Objective 2.1: Throughout the school year, create safe spaces within schools for students to discuss drug-related topics openly, encouraging a culture of curiosity, understanding, and non-judgmental dialogue (ongoing).

Objective 2.2: After the curriculum development and teachers' training, start and maintain peer mentorship programs to facilitate student communication, promoting community and support in navigating health-related challenges (after month nine and ongoing).

Goal 3: Enhance Community Outreach and Partnerships

Objective 3.1: Collaborate with local healthcare professionals to provide guest lectures, workshops, and resources that supplement the curriculum and offer diverse health and substance use perspectives (after month six and ongoing).

Objective 3.2: Establish partnerships with local law enforcement agencies to organize community events to raise awareness about the consequences of illicit drug use, emphasizing a collaborative approach to address the issue (after month nine, and then yearly).

Suggest data to measure success: Effective health literacy programs require data-driven decision-making. For enduring health literacy improvements, directly engage youth, involve community stakeholders, and assess the impact Sørensen (2022).

1. Changes in community context

Data Collection: Address community context changes by collecting data on demography, educational resources, and health concerns for youth.

Use of Data: Health literacy needs can be identified via trend analysis. Adjust programs and interventions accordingly.

2. Increasing coalition resources

Data Collection: To increase coalition resources, collect data and assess available resources. This includes funding, expertise, and collaborations.

Use of Data: Strategically fund youth health literacy programs. Request more funding if needed.

3. Characteristics of the coalition structure

Data Collection: Collect data about members' backgrounds, talents, and roles.

Use of Data: Design targeted health literacy initiatives using various expertise. Make sure members cooperate.

4. Member Characteristics

Data Collection: Gather information about members' expertise and dedication.

Use of Data: Customize training and education depending on member profiles. Promote ownership and involvement.

5. Member engagement and satisfaction

Data Collection: Regularly evaluate member satisfaction and participation.

Use of Data: Address engagement barriers with data to retain people.

6. Coalition facilitation and communication process

Data Collection: Assess communication, meeting efficacy, and decision-making transparency.

Use of Data: To improve communication. Ensure youth voices are heard and valued in health literacy discussions.

7. Group dynamics and leadership

Data Collection: Track coalition dynamics, conflicts, and leadership distribution.

Use of data: To improve relationships. Encourage youth leaders to promote health literacy.

8. Relationship development and network structure.

Data Collection: Collect data about the coalition's internal and external networks.

Use of Data: Use data to strengthen school, community, and youth group collaborations. Expand reach.

9. Community partnership initiatives

Data Collection: Record community collaborations.

Use of Data: Highlight youth-focused health literacy efforts. Find ways to improve.

10. Progress in planning and implementation.

Data Collection: Monitor program progress.

Use of Data: Celebrate successes, discuss issues, and adjust strategy based on data.

Conflict Resolution

The problem with conflict is not that it exists, but rather that it is poorly managed (Piryani & Piryani, 2019). Improper management leads to unfavorable and counterproductive outcomes, while good management encourages healthy competition, sees the differences between people, and uses them as a powerful motivation (Piryani & Piryani, 2019). The steering committee will work on specific skills that make it easier to negotiate. These skills give them the power to manage tough situations with grace. By focusing

on these skills, negotiators can set clear goals for growth, see their strengths, and make smart decisions during negotiations. This method goes beyond labels and gives people a complete idea of how negotiations work (Schneider, 2012).

- Being assertive means being able to say what you want, need, and personal limits without being too hostile.
- Empathy means being able to understand and value the other person's feelings, points of view, and worries.
- Being flexible means being able to change and be open to new ideas, even when problems come up out of the blue.
- Social intuition means picking up on unspoken cues, reading body language, and knowing how things work in a bargaining setting.
- Ethical behavior means following moral rules and thinking about how your actions will affect everyone involved.

Consistency in behaviors builds trust and reliability. Enduring partnerships thrive when both parties actively contribute, communicate honestly, and remain dedicated to common goals (Schneider, 2012). These negotiation skills are crucial for the steering committee in achieving the vision and goals of addressing the SDOH in Burke County Public Middle and High School Districts.

Sustaining Momentum

Some tactics help institutionalize collaboration among key stakeholders, maintaining momentum over time and delivering the benefits of collaboration. By implementing these strategies, the steering committee can maintain momentum and gain resources and support for their collaborations (*Cutting Through the Complexity: A Roadmap for Effective Collaboration (SSIR)*, n.d.)

They will formalize collaboration by establishing a mutual commitment to the collaboration's aim, structure, values, policies, decision-making processes, and so on (Six Strategies for Sustaining a Collaboration, 2020). Leading by preparing for turnover and developing shared leadership within the collaboration by providing leadership opportunities for all members, such as alternating meeting facilitation with the key stakeholders, and other critical activities. Measuring progress on increasing health literacy related to illicit drug use by tracking progress toward critical objectives. Encourage broader participation

from higher levels of the organization and learn from successes and shortcomings. Deepen the target population's knowledge by building on previous experiences and documenting their learnings. Consider alternative funding sources, such as earned income models or new partners with extra resources to sustain the project (Six Strategies for Sustaining a Collaboration, 2020).

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Insights & Recommendations

Leadership Framework



(Canadian College of Health Leaders, 2024)

Slide 13, *Molen Barrameda*

The LEADS framework, which stands for Lead Self, Engage Others, Achieve Results, Develop Coalitions, and Systems Transformation is a comprehensive and innovative strategy that describes the actions and traits that effective leaders use to bring about change in individuals, groups, and the entire system. There are 5 domains of action, and I will mention some leadership skills associated with our proposed intervention.

Lead Self: Leadership education and development should include health literacy management skills that promote self-awareness, emotional intelligence, and personal growth.

Engage Others: Promote an open exchange of ideas and information through the right channels of communication by engaging all stakeholders through public school campaigns and community-based campaigns to improve health literacy and reduce disparities among the target population.

Achieve Results: By integrating organizational mission, vision, and goals with reliable, valid evidence to

make decisions, thereby increasing the target population's health literacy related to drug use.

Develop Coalitions: By collaborating with public school systems to embed health literacy learning objectives within the curriculum through education integration. This builds trust and a sense of shared meaning.

Systems Transformation: To foster constant improvement and creativity, our group (County Catalysts), proposes the adoption of Project Star, which is a comprehensive, multi-faceted drug abuse prevention initiative that empowers students to learn about illicit drugs and reduce drug use.

APPENDIX C: JEFF CINEAS INDIVIDUAL DELIVERABLES

APPENDIX C.1: SOCIAL DETERMINANTS OF HEALTH ANALYSIS

Introduction

Social determinants of health are all the roadblocks that prevent one from achieving good health outcomes that they otherwise deserve (CDC, 2023). Poor health literacy in middle and high school students ages 12-18 of Burke County about illicit drugs, is a social determinant of that community. The goal of addressing this social determinant of health is to increase social and community support that would foster environments that improve health, well-being, and quality of life for middle and high school students of Burke County.

To further illustrate the problem, it is important to define health literacy which is “the degree to which individuals can find, understand, and use information and services to inform health-related decisions and actions for themselves and others” (National Institutes of Health, 2021). Health literacy is a central focus of Healthy People 2030, which is a 10-year measurable public health list of objectives with tools to help track progress toward achieving them (Office of Disease Prevention and Health Promotion, 2023). Goals found in Healthy People 2030, are useful for achieving better health outcomes in our communities, especially in Burke County where the rate of drug overdose deaths is higher than the statewide rate (North Carolina Department of Health and Human Services, 2021).

The time for this change is now, as illicit drugs are dangerous substances. The immediate ramifications of youth substance abuse can lead to a plethora of problems like, “academic difficulties, health-related problems, poor peer relationships, and involvement with the juvenile justice system” (Office of Juvenile Justice and Delinquency Prevention, 1998). Since the youth in Burke County are exposed to such a drug-polluted environment, students can learn and repeat this behavior over an extended period. In a systematic review that examined the risk factors for drug overdose in young people, “being that brain maturation in young people, in particular, frontal lobe development, which involves impulse control and executive functioning continues to into the mid-20s, young people are more likely to engage in risky behavior like polysubstance abuse” (Lyons et al., 2019).

Geographic and Historical Context

Burke County is a rural area in the west central section of North Carolina's Mountain region of Appalachia (Burke NC, 2023). Burke has a total population of 89,000 citizens. It is estimated that 18.1 percent of the population is living below the national poverty line of 12.6 percent (Data USA, 2023). Most of the people living below the national poverty line in Burke County are under the age of 18 (Burke NC, 2023).

Health literacy is low in North Carolina, and most individuals with poor health literacy are those of low socioeconomic status (Ottosen, 2023). This links the nominal health literacy in Burke County to the high poverty seen in the region. In addition to poor health literacy, Burke County also suffers from high drug-related deaths.

Burke County, in recent years, has had an insurgence of drug-related deaths. To help curb this growing problem, the Burke County Health Department has offered free naloxone to anyone at risk of overdose (Burke NC, 2023). Groups like the Burke Substance Abuse Network have assembled stakeholders from different sectors to bring awareness and combat the growing overdose problem in Burke County (Burke Substance Abuse Network, 2023).

As stated by the Burke County health assessment data, "Burke County was one of two counties in North Carolina that had the highest rate of drug overdose deaths in the western region, and ranked second as the county with the most drug overdose deaths in 2012 to 2019" (Burke County, 2022). Appalachia, where Burke County is located, is ridden with many drug overdose deaths. From 2012 to 2017 opioid overdose deaths rose by nine percent which is far greater than the national average (NORC, 2023). In 2021, North Carolina compared to other states in Appalachia, had the second-highest rate of opioid overdose deaths (NORC, 2023).

Priority Population

The focus of this intervention is centered around Burke County public middle and high school students, aged 12-18 years old. Burke County consists of five public middle schools and five public high schools, with a combined enrollment of 2,508 middle schoolers and 3,763 high school students for the 2022-2023 academic year (Burke County Public Schools, 2023). The average per-pupil expenditure in 2022 for Burke County was \$9,869 which is far lower than the national average of \$13,452 (US News,

2024). This statistic shows that there is a lack of investment in the quality of education that school students are obtaining, which is linked to their poor health literacy (Burke County, 2019).

Since these students live in Burke County, there is an ease of access to illicit drugs (Burke County, 2022). In the Pride survey, it was reported that “1 out of 5 students in Burke County have admitted to using illicit drugs and the average age of first-time use in Burke County is 12.5 years old” (Burke County, 2022, p. 44). Not only do these statistics show the gravity of this issue amongst young middle and high school students, but also why the county needs to target this age group. Moreover, if first-time use of drugs is averaged at 12.5 years, this increases the risk of drug abuse later in life, being that they are starting to experience illicit drug abuse earlier in life (Smith, 2023).

Measures

A health literacy map designed by the University of North Carolina, shown in **Appendix C.1.A**, depicts the areas of North Carolina with the lowest health literacy levels. Per the diagram, the lowest health literacy in North Carolina includes most of Burke County, with scores in the lowest quartile range. Examples of this poor health literacy are found in 2019 Pride survey responses from students of Burke County. Burke County health officials have discovered through survey data that, “almost 40 percent of the students in Burke County do not think marijuana is dangerous” (Burke County, 2019). Additionally, “1 out of 3 students in Burke County do not think drinking alcohol is dangerous” (Burke Wellness Initiative, 2019). In conjunction with poor health literacy is the high drug overdose rate.

As shown in **Appendix C.1.B**, the rate of drug overdose deaths per 100,000 North Carolina Residents from 2017-2021, has the rate Burke at 39.7 and the statewide rate at 27.6 (North Carolina Department of Health and Human Services, 2021). **Appendix C.1.A** and **Appendix C.1. B** overlap, a substantial amount of low health literacy and high drug overdose deaths were both seen in Burke County. One way to measure this correlation in the future, in greater detail, in Burke County school students is through surveys and questionnaires, with direct responses from the students before and after the intervention.

Rationale

Low health literacy in middle and high school students ages 12-18 in Burke County about illicit drugs, is tied to the top priorities found in the 2022 Burke County Health Assessment (Burke County,

2022). The positive impact of addressing the low health literacy of illicit drugs is that students are equipped with the knowledge to make better choices. One of the ways to prevent or reduce youth and young adult substance misuse is through “educating students and families about the dangers of drug use and about how to prevent misuse and addiction” (U.S. Department of Education, 2023). In conclusion, it is recommended that the county create a health literacy program for Burke County middle and high school students.

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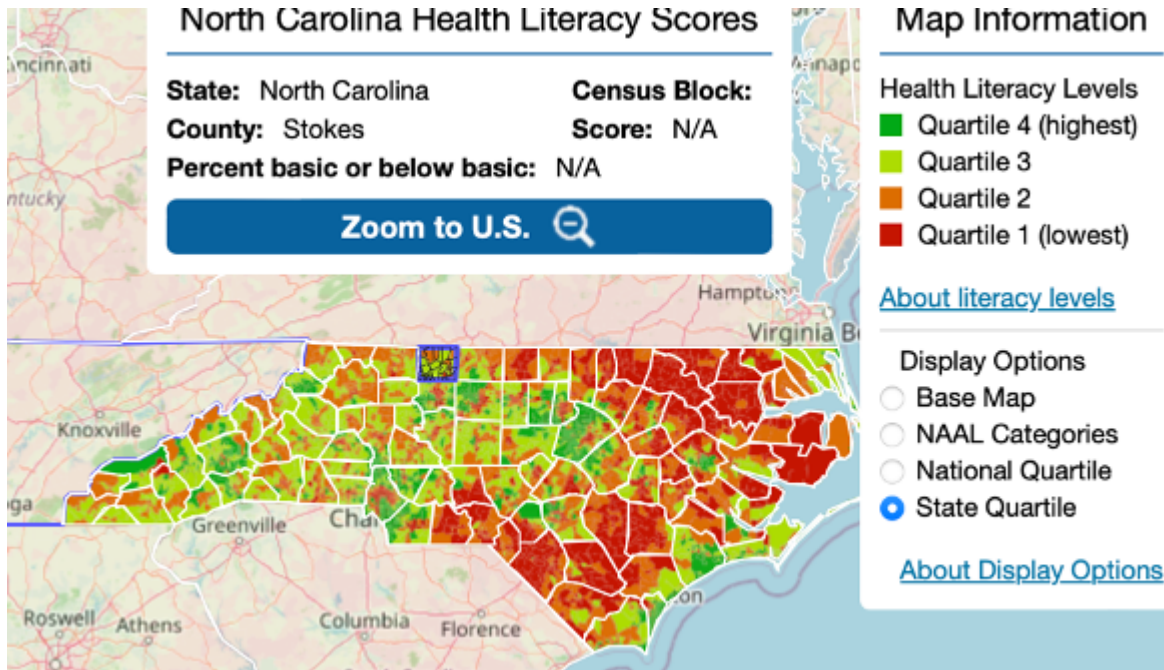
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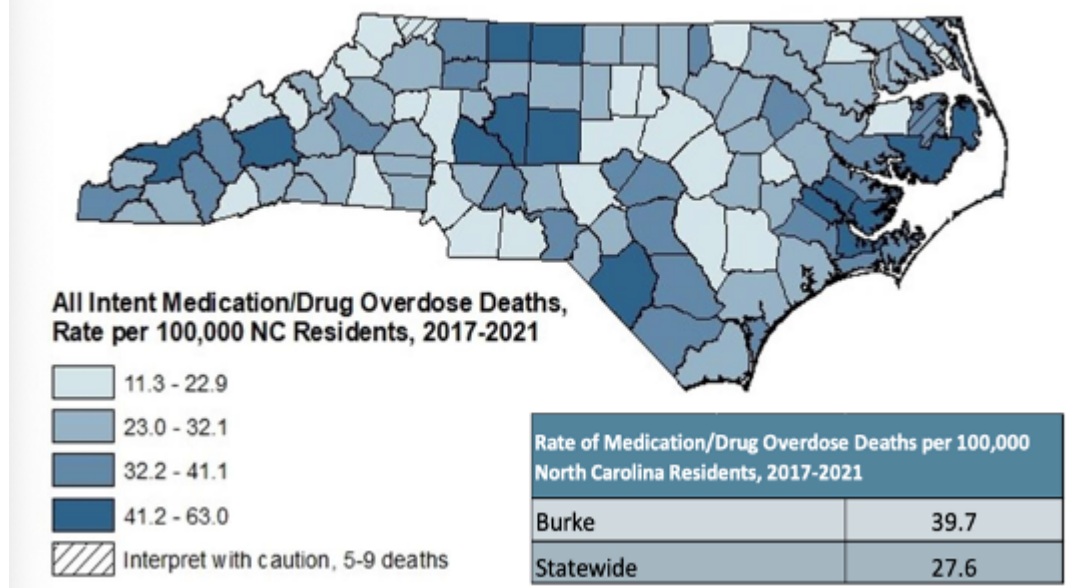
APPENDIX C.1.A: NORTH CAROLINA HEALTH LITERACY SCORES MAP FOR 2023



Data source: Communicate Health, University of North Carolina

**APPENDIX C.1.B: RATE OF MEDICATION AND DRUG OVERDOSE DEATHS, ALL INTENTS
BETWEEN 2017-2021**

Rate of Medication & Drug Overdose Deaths, All Intent
Per 100,000 North Carolina Residents, 2017-2021



Data source: North Carolina Department of Health and Human Services

APPENDIX C.2: CONCENTRATION DELIVERABLE 1: POLICY

Introduction

Social determinants of health (SDOH) are the social, economic, and physical conditions and systems in which people are born, live, work, and age (Centers for Disease Control, 2022). These nonmedical factors significantly affect health, well-being, and quality of life, even more than healthcare access and genetic factors (Centers for Disease Control, 2022). Health literacy is an SDOH within the domain of social and community context that refers to individuals' ability to obtain, understand, and use information and services to make informed health-related decisions. Health literacy empowers individuals to critically evaluate information and adopt behaviors to improve their health (Stormacq et al., 2019).

Low health literacy among adolescents related to illicit drugs leads to inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions (Yangyuen et al., 2021). North Carolina ranks 41st out of 50 states in health literacy (North Carolina Health Literacy, n.d.), and Burke County adolescents demonstrate a lack of awareness of substance risks, with a significant percentage viewing alcohol, vaping, and marijuana as safe (Burke County, 2022). With a high prevalence of students admitting to illicit drug use, Burke County Public Schools (BCPS) middle and high school students, aged 12-18 years, were identified as the priority population for increasing health literacy (Burke County, 2022).

Direct Policy

When constructing an intervention that would support improved health literacy of illicit drugs in BCPS students, it is important to consider the policies that directly target this social determinant of health. One major policy that directly affects health literacy in BCPS is 115C-81.20 of the state of North Carolina Education Program laws (North Carolina General Assembly, 2017). This law was passed by the North Carolina General Assembly, which is responsible for creating and enforcing all laws in North Carolina (North Carolina General Assembly, 2024). This law mandates the development and implementation of alcohol and drug use prevention, as a part of the curriculum from kindergarten through high school in North Carolina (North Carolina General Assembly, 2017). Law 115C-81.20, explicitly says that "each local board of education shall develop and implement a list of alcohol and drug use prevention education materials that include components for teacher training and ongoing assessment and evaluation to verify

success and ensure the use of up-to-date information and strategies” (North Carolina General Assembly, 2017).

Law 115C-81.20 influences the health and literacy issue in school students of Burke County, because it mandates the curriculum from kindergarten through high school to include information on illicit drug use. The purpose of this law is to help prevent the use of illicit drugs, however, an alarming rate of poor health literacy concerning illicit drugs in Burke County exists (Burke County, 2019). For instance, it has been reported in the 2019 Pride survey which is a questionnaire for students in grades 6 through 12, that “30% of students in Burke County ages 12 to 18, did not perceive alcohol use as a risky behavior” (Burke County, 2019).

Law 115C-81.20 was implemented in all schools throughout North Carolina including BCPS, but the intended ramifications of law 115C-81.20 are not seen in BCPS (Burke County, 2022). This too was shown in the 2019 Pride survey, which described how 1 out of 5 students in Burke County admitted they used illicit drugs, and 1 out of 55 high school seniors said they used opioid painkillers in the past 30 days (Burke County, 2019). From 2017 to 2019, the average prevalence of past-month illicit drug use in North Carolina was 8.3 percent compared to the national average of 8.2 percent (SAMHSA, 2019). Those regional, state, and national averages show that the prevalence of youth illicit drug use in BCPS is similar if not higher, compared to the state and national averages.

All the Board of County Commissioners (BCC) of Burke County are Republican (BCC, 2020). Therefore, the BCC of Burke County would identify with Republican ideology which calls for policies that support educating youth concerning the harms of illicit drug use (Republicanviews.org, 2015). Law 115C-81.20 would be favored by the BCC, as Republicans believe that children need to be educated on the negative repercussions of using illicit drugs (Republicanviews.org, 2015). An article, that further explains Republican views on drugs throughout the years in American history states, “For half a century, the Republican Party has advocated for strict drug laws and little tolerance for drug use pushing for research, education in schools and rehabilitation” (DrugRehab.com, 2019).

The BCC and the general public would support proposing an intervention that focuses on championing an illicit drug health literacy program in middle and high schools in BCPS. In 2020, most of Burke County voted for Republican candidates in the presidential elections (Data USA, 2023). Since most

of the key stakeholders that would be engaged in creating this intervention are Republicans, championing an illicit drug health literacy program in BCPS would be met without disapproval or backlash.

Indirect Policy

It is important to not only consider policies that directly affect this social determinant that we will address but also policies that indirectly affect it. The Comprehensive Addiction and Recovery Act (CARA) of 2016 is federal legislation that indirectly supports improved health literacy in middle and high school students of Burke County. The main component of the CARA is that it authorizes over \$181 million each year to fight the opioid epidemic by increasing prevention programs and expanding recovery support for students in high school (USC, 2016). The core of this law provides a framework for the Department of Health and Human Services to expand substance disorder recovery services through grants in all states, which could be a more tailored approach to addressing the rise in substance abuse and low health literacy in Burke County (USC, 2016).

Again, the CARA is a federal law that provides for increasing the awareness and expansion of drug rehabilitative services (USC, 2016). With a high rate of illicit drug use amongst Burke County students as shown above, those who become addicted to illicit drugs, should not suffer in silence and have the best care available to them. As it has been shown, treatment and rehabilitative services reduce illicit drug use in people (IMCSACS et al., 2018). However, data that measured the efficacy of the CARA shows that its impact on preventing/reducing youth substance is not yet available, which does not support or nullify the benefit of this law in helping youth (ONDCP, 2022).

Increasing health literacy concerning illicit drugs, and the resources available to help fight their use and addiction is important, as the average age of first use in Burke County in 2019 was 12 years old (Burke County, 2019). It has been shown that those who start using illicit drugs as a child have a higher chance of addiction or abusing other substances (SAMSHA, 2014). Health literacy surrounding illicit drugs should highlight addiction as a mental condition, which is treatable and should not have a stigma associated with it (Healthy Life Recovery, 2024).

The CARA is the first major, “bipartisan federal addiction legislation in 40 years that tackled many ambits of the opioid epidemic through prevention, treatment, and recovery” (CADCA, 2023). This law was signed by President Barack Obama but received full bipartisan support meaning that both Democratic and

Republican parties in Congress supported the provisions of this law (Drug Policy Alliance, 2016). The BCC supports the provisions of this law given they align with Republican core values concerning illicit drugs which are to prevent their use, as stated above. Similar to law 115C-81.20, this indirect law is another policy that aligns with our intervention.

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APPENDIX C.3: CONCENTRATION DELIVERABLE 2: QUALITY

Introduction

Social determinants of health (SDOH) are the social, economic, and physical conditions and systems in which people are born, live, work, and age (Centers for Disease Control, 2022). These nonmedical factors significantly affect health, well-being, and quality of life, even more than healthcare access and genetic factors (Centers for Disease Control, 2022). Health literacy is an SDOH within the domain of social and community context that refers to individuals' ability to obtain, understand, and use information and services to make informed health-related decisions. Health literacy empowers individuals to critically evaluate information and adopt behaviors to improve their health (Stormacq et al., 2019).

Low health literacy among adolescents related to illicit drugs leads to inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions (Yangyuen et al., 2021). North Carolina ranks 41st out of 50 states in health literacy (North Carolina Health Literacy, n.d.), and Burke County adolescents demonstrate a lack of awareness of substance risks, with a significant percentage viewing alcohol, vaping, and marijuana as safe (Burke County, 2022). With a high prevalence of students admitting to illicit drug use, Burke County Public Schools (BCPS) middle and high school students, aged 12-18 years, were identified as the priority population for increasing health literacy (Burke County, 2022).

The first quality project focuses on unmet activity 10.2 in which the local department was bereft of educational materials targeted to an at-risk group identified in the community health assessment. Through the project titled, Knowledge is Power: Increasing Health Literacy to Promote Drug-Free Schools and Save Lives in Burke County Burke County Health Department will assist Burke County Public Schools to spearhead a program to increase health literacy related to illicit drugs amongst middle and high school students in Burke County. The internal and external stakeholders as described in the first quality project will be brought to the forefront to draft the core elements of this project. The project staff will track the development of "Knowledge is Power" through a series of key output, process, outcomes, and balancing measures. In the first quality project, a fishbone diagram was created to identify the root causes of the poor health literacy of Burke County middle and high school students.

Quality improvement (CQI) has been used as a method of fine tuning, where the tenuous parts of the system are exposed. The belief in quality improvement is that there is an opportunity for improvement in every process (Berwick, 1998). There are numerous quality improvement tools available to identify the causes of quality problems where the change needs to happen (Hughes, 2008). These tools allow developers to potentiate a hypothesis for change concepts (Jones, 2021). A few tools identified in quality improvement that can be used to create change concepts are check sheets, fishbone diagrams and the five whys (Olson, 2020).

CQI tools

A check sheet is an important quality improvement tool designed to systematically record occurrences and help identify trends (ASQ, 2024). It is structured with a header, categories, tally marks and a total (ASQ, 2024). Check sheets are often used in quality improvement for process improvement and problem solving (ASQ, 2024).

A fishbone diagram is an important tool for organizing the complex relationships between the factors that contribute to a problem (ASQ, 2009). They are structured with the problem in the center and main categories of potential causes as the spine of the fishbone (ASQ, 2009). Next, each category branch is further divided into subcategories, and at first glance the fishbone diagram shows a fish' skeleton (ASQ, 2009).

The five why's is another problem-solving technique which involves identifying the problem and asking why this is a problem (Card, 2017). This process is repeated until the root cause is identified and the further questioning cannot yield meaningful insight (Card, 2017). Moreover, the five why's method is another systematic problem-solving approach which goes beyond surface-level and seeks to uncover the underlying cause (Card, 2017).

CQI Approach

Check sheets, fishbone diagrams, and the five why's can all be applied to help address this unmet activity of 10.2 and identify change concepts. A check sheet uses observational or retrospective data to help identify trends (ASQ, 2024). For example, drafting a check sheet that encompasses data of Burke County students from the Pride survey, will provide a clear depiction of the current lack of education system of BCPS (Burke County, 2022). A fishbone diagram, and the five why's can dive deeper than the

check sheet, in that they both can provide a better root-cause as to why the Burke health department is not meeting activity 10.2 (ASQ, 2009). The issue presented in using either the fishbone diagram or five why's, is lack of research within the local Burke health department to understand why they never sought to create a program that provides educational materials to BCPS.

After creating change concepts for the unmet activity of 10.2, from the three CQI tools listed above, change ideas can be identified (HQO, 2013). A change idea is the plan that your team comes up with to implement the change and it stems from the change concepts (HQO, 2013). A change idea particular to the change concepts identified, if either of those CQI tools above were used, could be to create new curriculums that educate the students on illicit drugs. To help propel this change idea incentives could be given to school districts like new computers for classrooms, financial grants, or increased salaries for school employees. To test this change idea Plan-Do-Study-Act (PDSA) cycles could be run, which is an iterative process that allows for the observation, implementation and measuring of the change idea (Hughes, 2008).

PDSA cycles are intended for testing small scale changes to build confidence in the change idea (Vermont Agency of Education, 2019). This proposed change idea would be tested on a small scale, starting within a school in Burke County public schools to measure its success. Surveys similar to the Pride survey, can be used to collect data on whether the students have improved health literacy about illicit drugs. From there more PDSA tests can be done in additional schools, until it is adopted on a greater scale like the whole county. The PDSA process is an iterative process so numerous cycles would need to be done to ensure that creating new curriculums in Burke County public schools would increase health literacy (Hughes, 2008).

Every cycle of PDSA is configured in 4 sections: plan, do study, and act (Hughes, 2008). The initial cycle would consist of the following plan, do, study and act phases. The plan phase would be identifying where the problem exists within BCPS from the unmet activity of 10.2, creating goals, and a plan. The do phase would consist of setting a deadline for the school to create a new curriculum that focuses on increasing health literacy. The study phase would be to analyze the results from the survey conducted in the school to measure their health literacy. And the final act phase would be to look at the

findings derived from the data to make an informed decision on whether the change idea would make a change.

Implementation of Change Idea

Every cycle of the PDSA cycle builds on the insights and experiences gained from the previous cycle (Hughes, 2008). After several PDSA cycles show success of the change idea identified in this paper, the recommendation is to proceed by implementing this at a larger scale. Certain factors that would be considered in the scaling process, are the costs of changing the curriculum, enforcing and supervising schools on implementing the new change, and the resistance from school districts and faculty. These factors apply to unmet activity 10.2, in how the specific cost of creating the curriculum might be too high for the district to implement the plan, also if there is resistance to implementing this change no one at the Burke health department or BCPS will help enforce it.

To ensure sustainability it is important to include stakeholders from the affected community who know and understand the problem at hand (Stocker et al., 2020). Stakeholders are individuals who are affected or have an effect on the intervention (Kansas University, 2023). To yield the best results in an intervention, it is important to get notable stakeholders involved in drafting the solution, decide their level of influence and interest, and keep them engaged throughout the process (Kansas University, 2023). Incorporating stakeholders in drafting the solution for BCPS will provide sustainability, because of their influence in the community and how they will help drive the implementation of the intervention (Stocker et al., 2020).

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Overview of SDOH

Evidence of Low Health Literacy from the 2019 BCPS Middle and High School Pride Survey

12.5 years old
average age of first time substance use



1 out of 3
BCPS middle and high school students
do not think drinking alcohol is dangerous

40 percent
of BCPS middle and high school students
do not think vaping is dangerous



Slide 6, Jeff Cineas

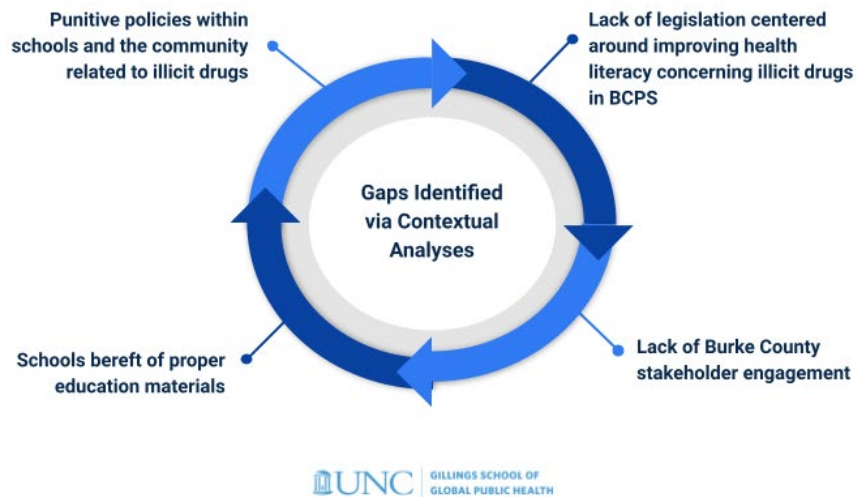
Health literacy is quite low in North Carolina. North Carolina ranks 41st in health literacy compared to other states, with 25 percent or more of residents in each Burke County census tract have basic or below basic health literacy, which means they may be able to locate information in simple texts but struggle with complex health information. Low health literacy among adolescents related to illicit drugs leads to inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions.

In **recent years** Burke County has had an insurgence of drug related deaths. The 2022 Burke Community Health Assessment states that, “Burke County was ranked second as the county with the most drug overdose deaths from 2012 to 2019.”

On this slide we have some of the startling statistics from the 2019 Pride survey of Burke County Public middle and high school students. The data revealed the following:

- The average age of first time use in Burke County is 12.5 years old.
- 1 out of 3 students in Burke County do not think drinking alcohol is dangerous.
- Almost 40 percent of students in Burke County do not think vaping is dangerous.
- Almost half of the students in Burke County do not think marijuana is dangerous.
- 1 out of 5 students in Burke County have admitted to using illicit drugs.

Overview of SDOH



Slide 7, Jeff Cineas

Our contextual analyses showed that:

- North Carolina law mandates that the development and implementation of alcohol and drug use prevention is a part of the curriculum from kindergarten through high school. However, there's still a lack of policy/responsibility of schools to teach about illicit drugs. Research indicates that low health literacy among adolescents related to illicit drugs can contribute to developing an inadequate understanding of their associated health risks.
- There are policies which mandate the development and implementation of alcohol and drug use prevention, as a part of the curriculum from kindergarten through high school in North Carolina but they are not sufficient enough to help decrease the social gaps identified.
- BCHD should focus on how community stakeholders can collaborate to create relevant educational materials and informational sessions to increase the health literacy of BCPS middle and high school students.
- There are punitive policies (suspensions) within schools and the community which lead to students becoming disengaged and increased drug use related to illicit drugs

APPENDIX D: MANDOLIN MCCONAHA INDIVIDUAL DELIVERABLES

APPENDIX D.1: SOCIAL DETERMINANTS OF HEALTH ANALYSIS

Introduction

Social Determinants of Health (SDOH) are the factors in our daily lives that affect our health and well-being. These include things like where we live, how much money we have, the education we receive, the quality of our housing, and the strength of our community connections. The conditions and experiences we encounter in our environment play a crucial role in shaping our overall health outcomes, affecting us both in the short term and over our lifetime (Healthy People 2030, n.d.). The Social and Community Context, a domain within SDOH, encompasses individuals' relationships, interactions, and community environments. Factors such as social support, safe neighborhoods, and financial stability significantly contribute to overall well-being. Within this domain, health literacy serves as a crucial factor that influences an individuals' capacity to navigate, comprehend, and apply health-related information within the broader context of their relationships, communities, and environments (Healthy People 2030, n.d.).

Increasing the health literacy of students aged 12-18 around substance use of illicit drugs is essential for improving the health outcomes of our youth (Healthy People 2030, n.d.). Health literacy is crucial for making informed and empowered health-related decisions (University of North Carolina at Chapel Hill, n.d.). Illicit drugs are illegal and controlled substances that include a range of consumable or absorbable items such as alcohol, tobacco products, drugs, inhalants, and others, which can lead to dependence and other adverse effects (Centers for Disease Control and Prevention, 2022). Limited health literacy among teens has been associated with an increased likelihood of engaging in risky health behaviors, specifically substance use (Rolová et al., 2021). The connection between inadequate health literacy and these behaviors indicates that adolescents with limited health literacy skills may encounter difficulties in accessing, comprehending, interpreting, and evaluating information related to substance use (Yangyuen et al., 2021). This may impede their capacity to make informed decisions to prevent the risks associated with substance use, underscoring the importance of addressing health literacy as a crucial component in any drug use preventive strategy (Yangyuen et al., 2021).

Addressing substance use among teens in Burke County, North Carolina is a crucial investment in the future well-being of our youth. The adverse effects linked to adolescent substance use, including academic challenges, deterioration of both physical and mental health, strained relationships, and heightened risks of accidents, have significant short-term health impacts. Moreover, they may lead to more severe long-term consequences, such as chronic health conditions, drug overdose, and premature death (Das et al., 2016). Substance use is often intertwined with mental health disorders, affecting a significant percentage of youth (Youth.gov, n.d.). Research indicates that prevention programs can foster enduring resilience, equipping individuals with skills to better cope with future adversities (Feinberg et al., 2022). Through early intervention and the implementation of preventive measures, we can break the cycle of substance use in Burke County, mitigating these profound and lasting impacts. The goal is to provide early intervention strategies to equip teens with the knowledge and skills necessary to access, understand, and evaluate information about substances. This approach fosters responsible decision-making regarding the use of illicit drugs, reducing adolescent drug use, drug overdose and premature death and resulting in a brighter and healthier future for the youth in Burke County, North Carolina (Feinberg et al., 2022).

Geographic and Historical Context

Burke County, located in the central region of North Carolina's mountains and part of Appalachia (NC Department of Commerce, n.d.), is primarily a rural area with a population of approximately 90,000 people (Healthy Communities NC, n.d.). A substantial segment, accounting for 40.5 percent of the population, resides below 200 percent of the Federal Poverty Level, reflecting the economic challenges prevalent in this region. The demographic composition is 80.9 percent White, 6.22 percent Black, 3.63 percent Asian, and 2.61 percent Hispanic individuals (Data USA, n.d.). There are 26 schools in the Burke County School district and approximately 11,632 students, 2508 middle school students and 3,763 high school students (North Carolina school report cards, n.d.). The district's minority enrollment is 40 percent with 39.7 percent of students economically disadvantaged (Burke County Public Schools, n.d.).

Burke County faces a critical issue of drug overdose, with the average age of first-time drug use at 12.5 years old, underscoring the need for urgent attention to substance misuse (Burke County Public Health, 2020). Additionally, low health literacy exacerbates these issues, with North Carolina ranking 41st

in the country, emphasizing the need for targeted interventions (University of North Carolina at Chapel Hill, n.d.). The county provides some resources, but comprehensive and targeted interventions are lacking. Health literacy resources are provided by the Task Force for Health Literacy and the UNC Health Literacy Information Hub (Haltermann, 2017; University of North Carolina at Chapel Hill, n.d.) and the Burke Substance Abuse Network Coalition provides treatment and prevention services and partners with schools (BSAN, 2023).

Priority Population

The priority population is Burke County Public middle and high school students aged 12-18 years old. This encompasses a total enrollment of 2,508 middle-schoolers and 3,763 high school students across the county's 5 public middle schools and 5 public high schools during the 2022-2023 academic year (Burke County Public Schools, n.d.). The targeted schools are located in areas with the highest rates of drug overdose deaths within the county. Exclusions from the program include private school and homeschool students, individuals outside the specified age range, and those within the age range who are not currently enrolled as students.

Measures

Burke County stands out as one of the two North Carolina counties with the highest rate of drug overdose deaths in the western region, ranking second in the state with a drug overdose rate of 31.3 per 100,000 population (Healthy Communities NC, n.d.-b) (see **Appendix D.1.A**). The national rate of drug overdoses is 32.4 deaths per 100,00 (CDC, n.d.). The 2019 Pride survey conducted among middle and high school students in Burke County reveals alarming insights into adolescent drug use and attitudes, with the average age of first-time drug use recorded at 12.5 years old (Burke County Public Health, 2020). Nationally, 15 percent of high school students reported using illicit drugs, and 14 percent reported misusing prescription opioids (Center of Disease Control and Prevention, n.d.). North Carolina demonstrated low levels of health literacy with the state ranking 41st out of 50. Additionally, adolescents in Burke County exhibited a lack of health literacy and awareness of the risks associated with substance use, one-third did not perceive alcohol as dangerous, nearly 40 percent considered vaping safe, and almost half indicated that they believed marijuana posed no danger (Burke County Public Health, 2020). 1 in 5 students in Burke County have admitted to using illicit drugs (Burke County Public Health, 2020) and

31,000 (3.91 percent) youth in North Carolina experienced a substance use disorder in 2022 compared to the national average of 4.08 percent (NC Division of Public Health, n.d.) (see **Appendix D.1.C**).

Substance use is often intertwined with mental health disorders (Youth.gov, n.d.). North Carolina's overall youth mental health is ranked 42 out of 50 states indicates a higher prevalence of mental illness and lower rates of access to care compared to the national average (Burke County Public Health, 2020). Approximately 8 percent of K-12 students in North Carolina experience major depression and 132,000 youth experienced at least one major depressive episode in the past year with 51.9 percent of them going untreated (Mental Health America, n.d.).

This intervention would use evidence-based evaluation pre and post survey tools, such as the Pride survey and the Monitoring the Future Study, both school-based survey tools currently used in Burke County with middle and high school students to measure adolescent drug use and attitudes in order to assess the programs impact. This information underscores the severity of adolescent drug use and the mental health crisis in North Carolina, emphasizing the need for comprehensive interventions to address these interconnected issues and to ensure a healthier and more resilient future for Burke County youth.

Rationale

Social Determinants of Health and the Social and Community Context emphasizes the influential role of environmental factors, particularly community and social supports, in shaping our well-being and health outcomes. Moreover, it underscores the pivotal role of health literacy as a crucial factor influencing an individual's capacity to navigate, comprehend, and apply health-related information within the broader context of their relationships, communities, and environments (Healthy People 2030, n.d.). Enhancing health literacy in relation to substance use among students aged 12-18 in Burke County is a public health priority and a critical imperative with far-reaching implications for both immediate and lasting community health outcomes. A targeted initiative is crucial for addressing prevalent challenges such as academic struggles, poor physical and mental health, and the increased risk of chronic diseases and premature death among Burke County students (Das et al., 2016). The implementation of a focused health literacy program directly targets the root cause of these issues, providing students with essential tools to make informed decisions, effectively mitigating engagement in risky behaviors, and proactively preventing substance use (Rolová et al., 2021).

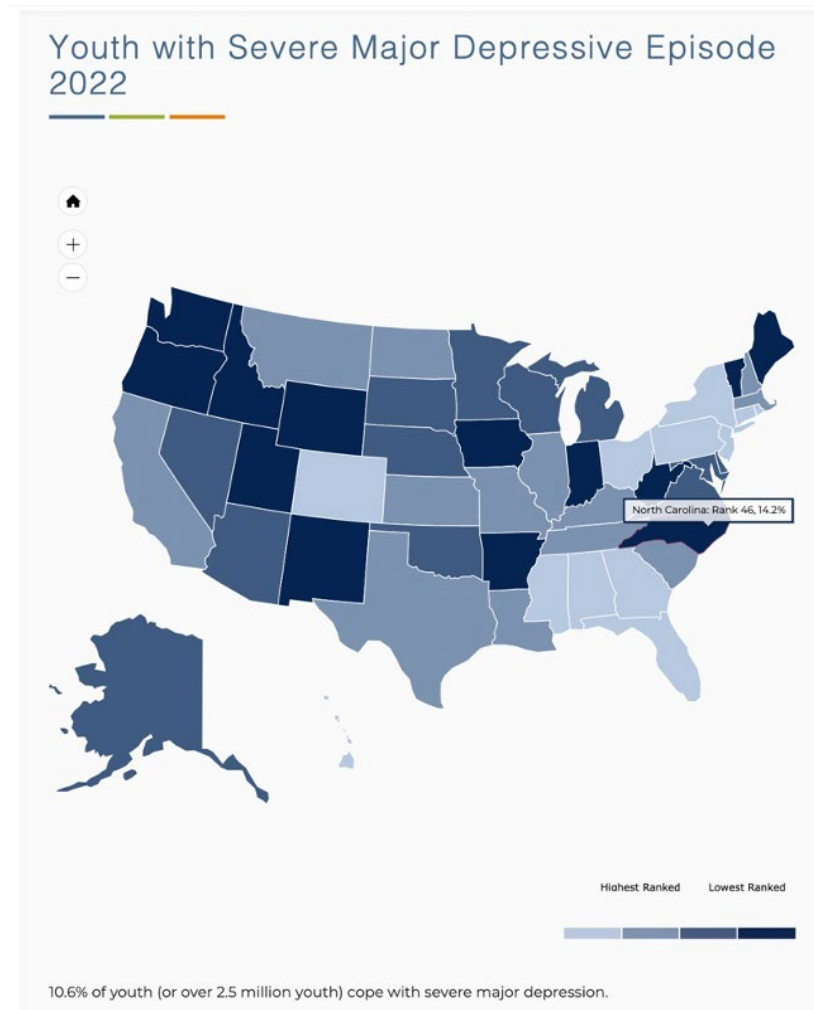
The impacts of addressing health literacy and substance use extend beyond individual well-being and have the potential to foster community-wide resilience. By cultivating a generation of youth well-versed in health literacy, we lay the foundation for healthier communities, characterized by lower rates of substance misuse, mental health issues, and premature death. Supporting this health literacy initiative represents an investment in the overall well-being of the community and the future of every youth in Burke County.

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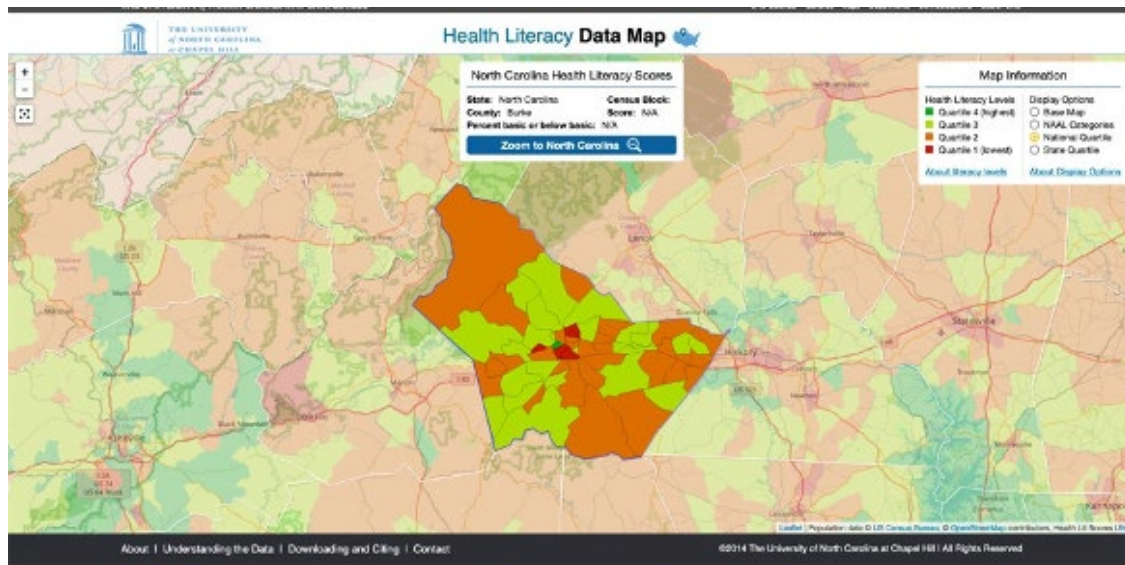
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APPENDIX D.1.A: YOUTH WITH SEVERE MAJOR DEPRESSIVE EPISODES 2022



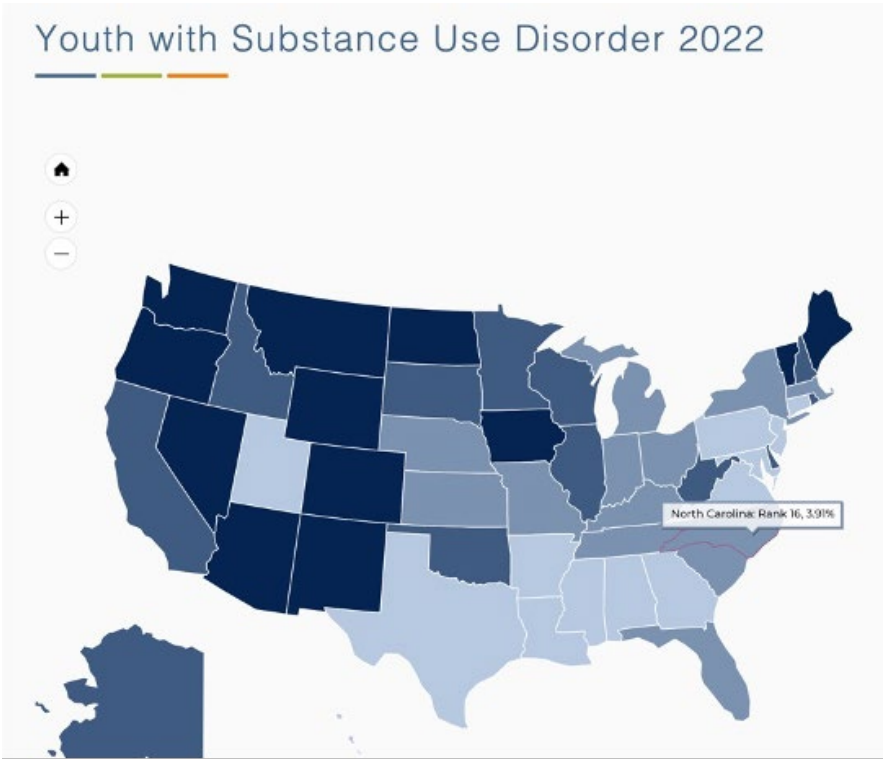
(Healthy Communities NC, n.d.-b)

APPENDIX D.1.B: HEALTH LITERACY DATA MAP



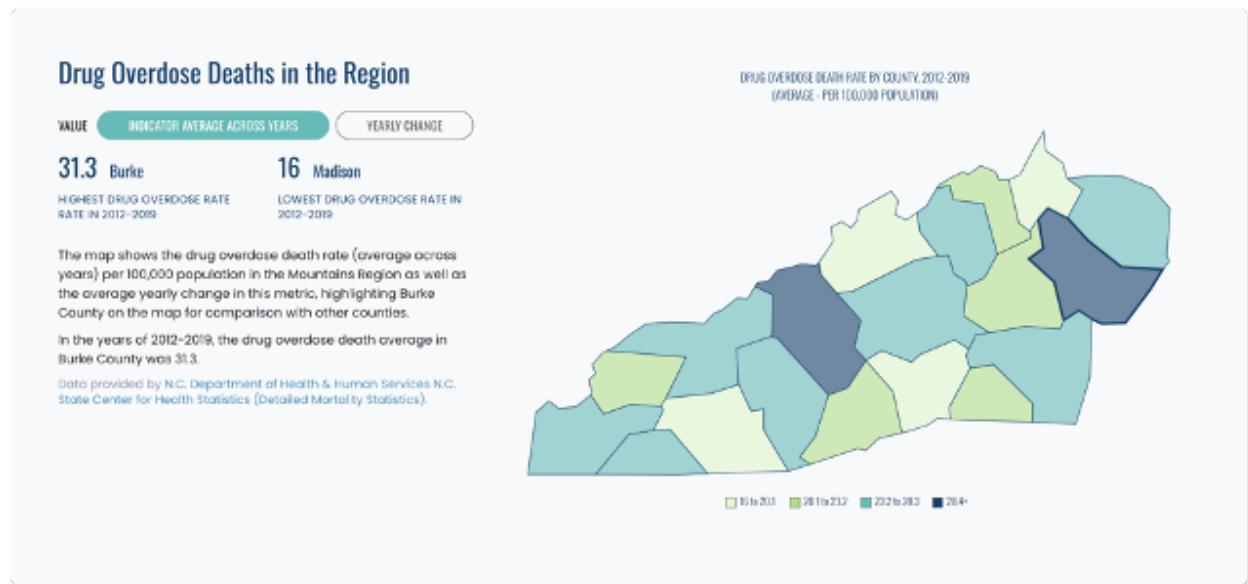
(University of North Carolina at Chapel Hill, n.d.-b)

APPENDIX D.1.C: YOUTH WITH SUBSTANCE USE DISORDER 2022



(Mental Health America, n.d.)

APPENDIX D.1.D: DRUG OVERDOSE DEATHS IN BURKE COUNTY, NORTH CAROLINA



healthycommunitiesnc.org/profiles/geos/burke-county/

(Healthy Communities NC, n.d.-b)

APPENDIX D.2: CONCENTRATION DELIVERABLE 1: SYSTEMS

Introduction

Social determinants of health (SDOH) are the social, economic, and physical conditions and systems in which people are born, live, work, and age (CDC, 2022). These nonmedical factors significantly affect health, well-being, and quality of life, even more than healthcare access and genetic factors (CDC, 2022). Health literacy is an SDOH within the domain of social and community context that refers to individuals' ability to obtain, understand, and use information and services to make informed health-related decisions. Health literacy empowers individuals to critically evaluate information and adopt behaviors to improve their health (Stormacq et al., 2019).

Low health literacy among adolescents related to illicit drugs leads to inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions (Yangyuen et al., 2021). North Carolina ranks 41st out of 50 states in health literacy (North Carolina Health Literacy, n.d.), and Burke County adolescents demonstrate a lack of awareness of substance risks, with a significant percentage viewing alcohol, vaping, and marijuana as safe (Burke County, 2022). With one in five students in Burke County admitting to illicit drug use, Burke County Public Schools (BCPS) middle and high school students, aged 12-18 years, were identified as the priority population for increasing health literacy (Burke County, 2022). This focus is crucial as the drug overdose crisis disproportionately affects individuals with limited health literacy (CDC, 2023), and unintentional drug overdose mortality rates surging in Burke County (Burke County, 2022).

The System and Wicked Problem Characteristics

The name of the system is the system to ensure health literacy regarding illicit drug use among teens in Burke County NC. The area of Concern is the limited access to high quality health literacy regarding illicit drug use among teens aged 12-18 in Burke County NC. Addressing limited health literacy concerning illicit substance use among teens in Burke County illustrates the characteristics of a wicked problem, notably the No stopping rule, One-shot operation, and the wicked problem as a symptom of another problem (Ramaswamy, n.d.). The problem complexity arises from interconnected factors that hinder resolution due to contradictory, incomplete, and evolving requirements, making it challenging to determine if a solution is final (Ramaswamy, n.d.). For instance, the intricate interplay of poverty, mental

health, familial and peer drug use, peer pressure, widespread drug experimentation, and punitive school policies creates obstacles to finding a solution. Moreover, each attempted solution introduces new complexities and unintended consequences, representing the "one-shot operation" characteristic (Ramaswamy, n.d.). Since each intervention carries significant consequences and there is no room for trial and error, there is limited opportunity to learn from past mistakes (Ramaswamy, n.d.). Additionally, low health literacy can be described as a symptom of other problems (Ramaswamy, n.d.), for example, low health literacy can be a symptom of and associated with poverty, language spoken and education attainment (Healthy People 2030, n.d.).

Mapping the System

At the individual level, key factors influencing the social determinant of health (SDOH) include the lack of knowledge around health literacy regarding the dangers of illicit drug use among teens, leading to an early age of first use and increased usage (Burke County, 2022). Teens demonstrating low health literacy rates and limited education and awareness of drug use risks and consequences are disproportionately affected by drug overdose (CDC, 2023). Mental health issues at the individual level also contribute to the cycle of self-medication and substance misuse (Burke County Public Health, 2020). Burke County was ranked 42nd in the nation in 2022 for youth with severe major depressive episodes (Healthy Communities NC, n.d.).

At the community level, the prevalence of substance misuse fosters an environment where drugs are easily accessible, increasing adolescents' access to drugs and the likelihood of experimentation (CDC, n.d.). This culture perpetuates the normalization of drug use among adolescents and can contribute to the development of addiction, overdose and death (CDC, n.d.). Also at the community level, stigmatization of drug use disorder results in a reduction of funding for crucial services, ostracizing individuals struggling with substance abuse issues and hindering their access to necessary resources (Sciences & Education, 2016). The negative perception surrounding drug use disorders perpetuates feelings of shame and guilt among affected teens, discouraging them from seeking support (Sciences & Education, 2016). At the policy level, this stigma may result in policymakers and funders allocating fewer resources towards health literacy education and prevention and recovery programs (National Institute on Drug Abuse, 2023). The lack of health literacy resources within the community around illicit drug use

further compounds the issue, leaving teens uninformed about the risks associated with drug use (CDC, 2023). At the organizational level, harsh treatment of teens caught with drugs at school and by law enforcement reinforces stigma, discouraging individuals from seeking help and hindering access to necessary support services (Columbia University, 2023). Addressing these multifaceted challenges requires comprehensive and coordinated efforts across various sectors of the community.

Causal Loop Diagram (see **Appendix D.2.A**)

Systems Archetypes

The causal loop diagram depicts the "Shifting the Burden" archetype, illustrating the tendency to address a problem's symptoms with quick fixes rather than tackling the root causes (see **Appendix D.2.A** – Green Loop) which impedes the implementation of lasting solutions despite providing immediate relief (Branz et al., 2021). For instance, school suspension may temporarily reduce teen drug use by temporarily removing involved students from school premises, but it leads to the unintended consequence of exacerbating the underlying issue (Columbia University, 2023). Suspensions result in decreased engagement with school and educational resources, including health literacy programs, which could empower students to make informed decisions about drug use (Columbia University, 2023). By solely relying on suspension as a response to drug use, the root cause - the lack of health literacy and lack of understanding risks - remains unaddressed, perpetuating a cycle where the problem persists or worsens over time. This archetype highlights the need to invest time and resources in addressing the root cause rather than opting for quick fixes that only provide temporary relief but fail to address the underlying issue.

Leverage Points and Transformation

Identifying system leverage points is essential for effecting meaningful change in addressing the issue of limited health literacy regarding illicit drug use among teens in Burke County (Ramaswamy, n.d.). These leverage points exist in three domains: Information, Organization, and Mindset (Kim, 1995). In the Information domain, as indicated on the causal loop diagram by the light green star on the green loop (see **Appendix D.2.A**), there is an opportunity of providing accessible, accurate health literacy information relating to illicit drugs, potentially reducing school suspensions that often lead to disengagement with school and increased drug use (Prins et al., 2023). This leverage point could be utilized to develop targeted interventions, such as developing programs focused on health literacy for illicit drug use

prevention and awareness. By investing in a comprehensive health literacy curriculum across various settings, adolescents can be equipped with the necessary knowledge and skills to make informed decisions and resist peer pressure, ultimately reducing experimentation and use (CDC, 2022.). Initiatives should aim to ensure equitable access to resources and information, particularly among marginalized communities and underserved populations, through community outreach and leveraging technology for dissemination (Das et al., 2016).

In the Organization domain, as indicated by the dark green star on the green loop and red star on the red loop, modifying punitive school policies and increasing funding for health literacy programming emerge as critical leverage points. These points could be utilized to develop alternatives to suspending students for drug use, ensuring they remain engaged with school and have access to resources, support systems, and services (Columbia University, 2023). Additionally, increasing funding for programming, indicated by the red star, could yield positive system outcomes by addressing the root causes of drug use. Finally, in the Mindset domain, changing mindsets and paradigms to reduce stigma associated with drug use disorders is crucial, as indicated by orange star on the red loop (Columbia University, 2023). This leverage point could be utilized to integrate destigmatizing language in the health literacy programs related to illicit drugs and foster a supportive and inclusive school community environment to encourage affected individuals to seek help and support (National Institute on Drug Abuse, 2023).

Insights, Strengths, and Weaknesses

This analysis benefited from a systems thinking approach, offering a comprehensive framework for understanding interconnected factors contributing to limited health literacy (Ramaswamy, n.d.). Systems thinking excels in uncovering complex dynamics, identifying intervention leverage points, and fostering collaboration among stakeholders (Goodman, n.d.). Insights from the development of the causal loop diagram revealed a system archetype: "Shifting the burden," which exposes a recurring pattern favoring quick-fix solutions over addressing root causes. Understanding this archetype provides valuable insights for effective problem-solving approaches (Ramaswamy, n.d.).

Further research is warranted to explore evidence-based interventions aimed at addressing low health literacy rates and improving school suspension policies. This research could assess the impact of comprehensive health literacy programs on reducing substance use among adolescents and investigate

disparities in access to information and resources among marginalized communities (Das et al., 2016). Additionally, examining the implications of punitive policies on student engagement and access to support services could inform more effective strategies for addressing drug-related issues in schools (Columbia University, 2023).

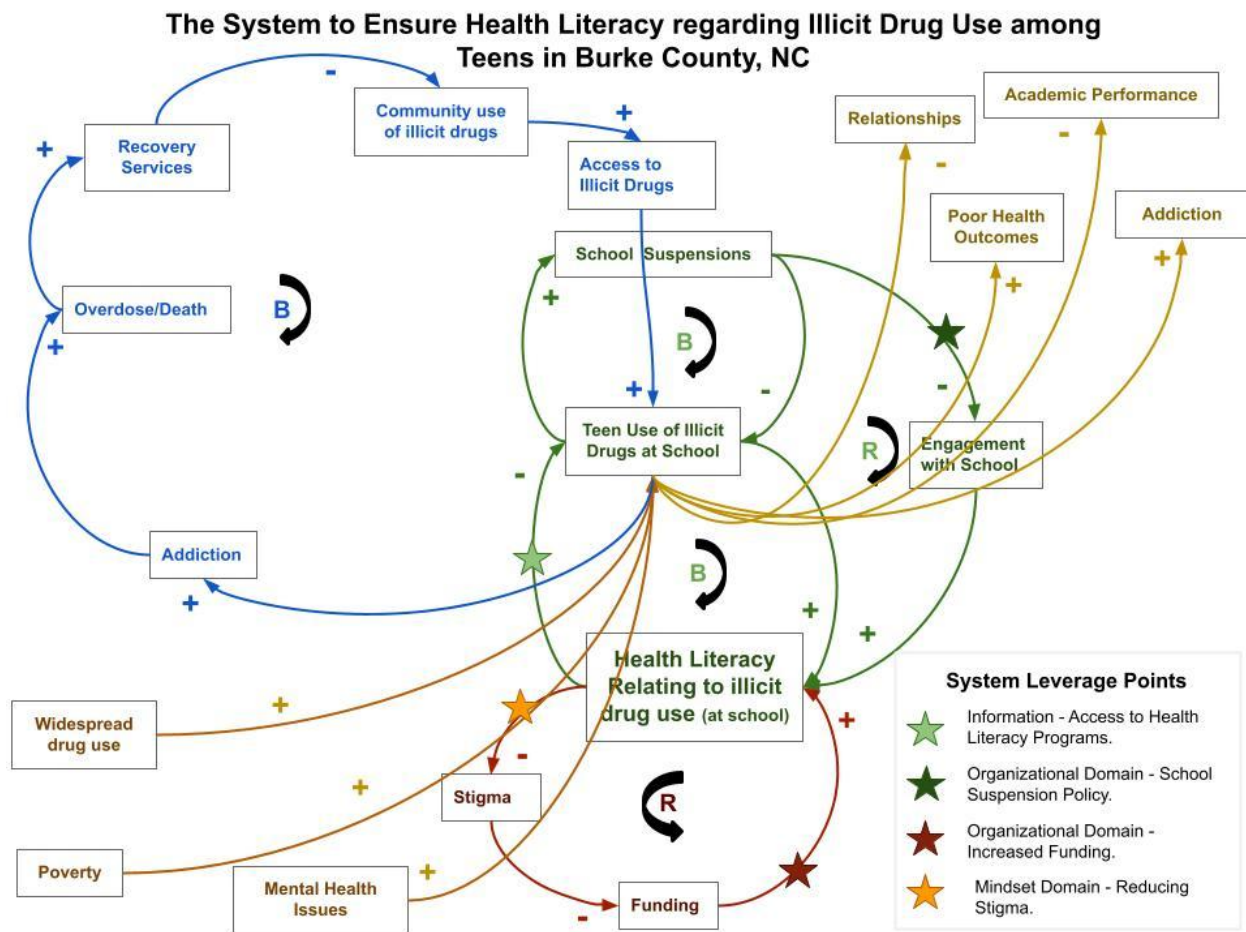
Despite its focus on a specific context, such as teen drug use in Burke County Schools, this analysis identifies leverage points for effecting meaningful change, particularly in the domains of Information, Organization, and Mindset. By targeting these leverage points, stakeholders can develop tailored interventions to enhance health literacy related to illicit drug use among teens, leading to positive outcomes for the community (Das et al., 2016).

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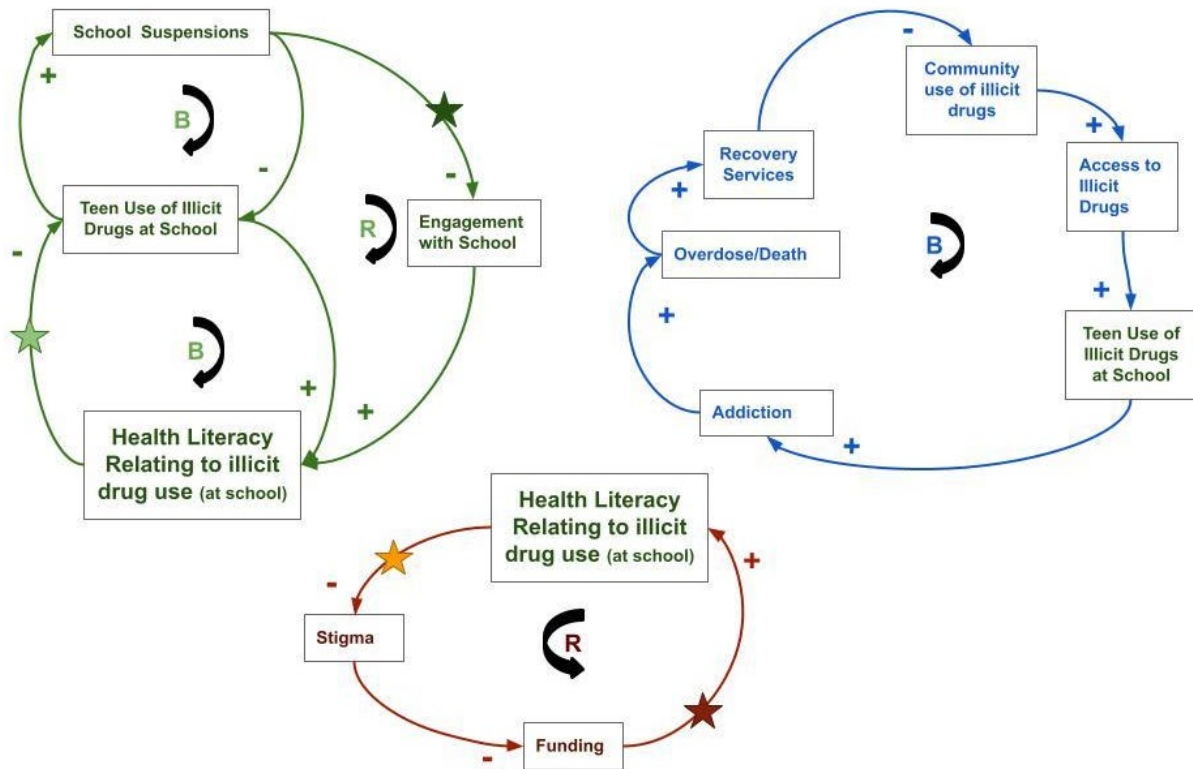
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APPENDIX D.2.A: CAUSAL LOOP DIAGRAM



APPENDIX D.2.A: CAUSAL LOOP DIAGRAM - SEPARATED LOOPS



APPENDIX D.3: CONCENTRATION DELIVERABLE 2: POLICY

Introduction

Social determinants of health (SDOH) are the social, economic, and physical conditions and systems in which people are born, live, work, and age (Centers for Disease Control and Prevention [CDC], 2022). These nonmedical factors significantly affect health, well-being, and quality of life, even more than healthcare access and genetic factors (CDC, 2022). Health literacy is an SDOH within the domain of social and community context that refers to individuals' ability to obtain, understand, and use information and services to make informed health-related decisions. Health literacy empowers individuals to critically evaluate information and adopt behaviors to improve their health (Stormacq et al., 2019).

Low health literacy among adolescents related to illicit drugs leads to inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions (Yangyuen et al., 2021). North Carolina ranks 41st out of 50 states in health literacy (North Carolina Health Literacy, n.d.), and Burke County adolescents demonstrate a lack of awareness of substance risks, with a significant percentage viewing alcohol, vaping, and marijuana as safe (Burke County, 2022). With one in five students in Burke County admitting to illicit drug use, Burke County Public Schools (BCPS) middle and high school students, aged 12-18 years, were identified as the priority population for increasing health literacy (Burke County, 2022). This focus is crucial as the drug overdose crisis disproportionately affects individuals with limited health literacy (CDC, 2023), and unintentional drug overdose mortality rates surging in Burke County (Burke County, 2022).

Policy 1 Summary

Constructing an intervention to enhance health literacy regarding illicit drug use among middle and high school students in Burke County involves considering pertinent policies targeting this social determinant of health (Burke County, 2022). One major policy is Law 115C-81.20 of North Carolina's Education Program laws, mandating alcohol and drug prevention education materials from kindergarten through high school, emphasizing teacher training and ongoing assessment (North Carolina General Assembly, 2017). Despite legislative efforts, challenges persist, evidenced by high substance use rates and a lack of perceived risk (Burke Wellness Initiative, 2019). Federal legislation like the Comprehensive Addiction and Recovery Act of 2016 indirectly supports health literacy initiatives, authorizing substantial

funding to combat the opioid epidemic (United States Congress, 2016). The political landscape of Burke County, led by Republicans, influences policy preferences regarding education and substance abuse prevention, suggesting that interventions aligned with Republican values may receive favorable consideration and support (Republicanviews.org, 2015) (see **Appendix C.2**).

Policy Solutions

Three evidence-based policy solutions identified to address the issue of poor health literacy in relation to illicit drug use among middle and high school students in Burke County, NC are the Life Skills Training Program, Project ALERT and Project STAR programs (U.S. Department of Education, 2001). The current status quo of drug literacy in Burke County reveals a concerning trend characterized by inadequate awareness and knowledge regarding the impacts of illicit drug use among adolescents and resulting in early age of first use (Burke County, 2022). Engaging policymakers at the local level is imperative to address this issue, given its significant impact on youth well-being and life outcomes (CDC, 2023). The lack of sufficient health literacy relating to illicit drugs in Burke County underscores the urgent need for targeted interventions aimed at enhancing awareness, promoting healthy behaviors, and providing access to relevant resources (CDC, n.d.). Addressing the current status quo is needed to empower adolescents with the information and skills needed to make informed decisions regarding drug use, thereby reducing use, associated risks and harms (CDC, n.d.).

The Life Skills Training (LST) Program is an evidence-based policy intervention implemented within the school environment and designed to address risk and protective factors associated with substance abuse among middle and junior high school students (Botvin et al., 1995; Botvin et al., 1997; Botvin et al., 2003). Engaging policymakers at the county commissioner level would be crucial for implementing this program, as it involves partnership between the BCPS and the Burke County Health Department and funding allocation (UNC School of Government, n.d.). The LST program delivers a 3-year prevention curriculum covering drug resistance skills, self-management skills, and general social skills through a series of structured sessions (U.S. Department of Education, 2001). One advantage of the LST program is its proven effectiveness in reducing substance abuse prevalence among youth, with studies demonstrating reductions of up to 87 percent in illicit drug use (U.S. Department of Health and Human Services & National Institute of Health, 2003). Additionally, the inclusion of booster sessions ensures long-

term benefits, with reductions in substance abuse prevalence persisting beyond high school years (U.S. Department of Health and Human Services & National Institute of Health, 2003). However, a potential disadvantage of the LST program is the need for sustained funding and resources to maintain program delivery over multiple years, which could pose challenges in resource-constrained settings (U.S. Department of Health and Human Services & National Institute of Health, 2003).

Overall, LST's cost-effectiveness falls in the mid-range, offering valuable training and resources with the on-site training workshop, priced at \$5,800.00 for up to 20 participants, provides tailored training but may be costly upfront (University of Colorado Boulder, 2024). Overall, the LST program demonstrates cost-effectiveness by providing substantial benefits to taxpayers and participants, while also reducing indirect costs associated with risky behaviors (Washington State Institute for Public Policy, 2023) (see **Appendix D.3.A**). One trade-off could involve allocating funds away from other existing school programs or initiatives. Organizations may need to prioritize resources and potentially reduce investments in other areas to accommodate the costs associated with implementing LST (Washington State Institute for Public Policy, 2023).

Project ALERT is a two-year, universal drug prevention curriculum designed for middle school students with the aim of reducing substance use initiation and use among youth (U.S. Department of Education, 2001). Engaging policymakers at the county commissioner level would be essential for implementing Project ALERT, as it involves curriculum adoption and allocation of resources. The program comprises 14 lessons focusing on substances most commonly used by adolescents and utilizes participatory activities and videos to establish non-drug norms, develop resistance strategies, and counter prodrug pressures (U.S. Department of Health and Human Services & National Institute of Health, 2003). One advantage of this program is its demonstrated effectiveness in preventing marijuana use initiation, reducing smoking prevalence, curbing alcohol misuse, and fostering pro-health attitudes among youth (U.S. Department of Health and Human Services & National Institute of Health, 2003). The program has been successful across diverse communities and with both high- and low-risk youth (U.S. Department of Education, 2001). A potential disadvantage of Project ALERT is that it only focuses on middle school students and there may be the need for ongoing program evaluation and updates to ensure relevance and effectiveness in addressing evolving substance use trends and youth preferences (U.S. Department

of Education, 2001). The cost of implementing the Project ALERT program is estimated to be \$18 per participant and includes program-related teacher time, such as training, and the cost of materials (Washington State Institute for Public Policy, 2023b). Overall, the cost of Project ALERT is relatively low compared to its potential benefits in preventing substance use among students (Washington State Institute for Public Policy, 2023b) (see **Appendix D.3.B**). One trade-off that organizations might face regarding the resource requirements is the allocation of staff time and training costs over two years (Washington State Institute for Public Policy, 2023b). This could potentially strain resources, especially for schools with limited staff capacity or competing priorities (Washington State Institute for Public Policy, 2023b).

Project STAR is a comprehensive drug abuse prevention community program that encompasses multiple components and systems levels targeting schools, parents, community organizations, and health policymakers (U.S. Department of Education, 2001). Engaging policymakers at the county commissioner level would be crucial for implementing Project STAR, given its multifaceted approach requiring collaboration across various sectors and resource allocation (U.S. Department of Education, 2001). The program includes a social influence curriculum for middle school students, delivered over a two-year period by trained teachers as part of classroom instruction, parent involvement is emphasized through activities such as homework assistance, family communication skill-building, and community engagement (Chou et al., 1998). One advantage of Project STAR is its demonstrated effectiveness in reducing drug use among participants over the long term and the program's comprehensive approach addresses multiple risk and protective factors associated with substance abuse, strengthening its potential for sustained impact (U.S. Department of Health and Human Services & National Institute of Health, 2003). A potential disadvantage of Project STAR may be the resource-intensive nature of its implementation, requiring investment in training, program delivery, and ongoing evaluation to ensure fidelity and effectiveness (U.S. Department of Health and Human Services & National Institute of Health, 2003). The program cost of implementing is estimated to be \$74 per participant, this cost includes staff training time outside of regular school hours and the cost of training and program materials (Washington State Institute for Public Policy, 2023c). The program is designed to be implemented over a three- to five-year period, with a comprehensive approach that includes school, parent, community, and mass media components to

address multiple influences on youth substance use (Washington State Institute for Public Policy, 2023c). Despite the initial investment, the program yields significant benefits, with a net benefit per participant of \$2,993 and a benefit-to-cost ratio of \$41.37 (Washington State Institute for Public Policy, 2023c) (see **Appendix D.3.C**). One trade-off of this policy could involve balancing the allocation of resources between individual-level interventions and broader school and community-level strategies (Washington State Institute for Public Policy, 2023c). While investing heavily in individual-level interventions, such as teaching youth drug resistance skills, may yield immediate results, allocating resources to implement broader school and community-change strategies, such as limiting youth access to alcohol or drugs, could have longer-term impacts on drug abuse prevention.

Policy Evaluation

The evaluation criteria for the proposed policies aim to gauge its effectiveness and feasibility in addressing health literacy regarding illicit drug use among middle and high school students. These criteria encompass the following: Cost to the County, evaluating the financial implications to the county; Impact, measuring the policy's effectiveness in increasing health literacy and decreasing use of illicit drugs among adolescents; Political Feasibility, assessing the likelihood of support from the Burke County Commissioners; Health Equity, ensuring all public school students have a fair opportunity to attain the highest level of health; and Ease of Implementation, considering the practicality, manageability, and feasibility associated with executing the proposed policy (CSU, n.d.). Scores were captured on a scale of 1-3, with one being the best and 3 the worst. The most suitable policy solution for this issue will be indicated by the lowest score (see **Appendix D.3.D**).

The LST and Project STAR programs stand out as the most appropriate policy choices, scoring lower overall than other options (see **Appendix D.3.D**). Despite moderate costs to the county, both programs demonstrate high impact and political feasibility (see **Appendix D.3.F** and **Appendix D.3.H**). However, Project STAR emerges as the preferred selection due to its comprehensive approach, engaging diverse stakeholders and targeting multiple systems levels, including schools, parents, community organizations, and health policymakers (U.S. Department of Health and Human Services & National Institute of Health, 2003). This systemic approach ensures a more holistic and effective response to the

public health challenge of substance abuse among adolescents in Burke County (U.S. Department of Education, 2001).

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APPENDIX D.3.A: LIFE SKILLS TRAINING (LST) PROGRAM COSTS

Benefit-Cost Summary Statistics Per Participant			
Benefits to:			
Taxpayers	\$563	Benefits minus costs	\$1,763
Participants	\$1,295	Benefit to cost ratio	\$15.97
Others	\$48	Chance the program will produce	
Indirect	(\$25)	benefits greater than the costs	63%
Total benefits	\$1,881		
Net program cost	(\$118)		
Benefits minus cost	\$1,763		

For an overview of WSIPP's Benefit-Cost Model, please see [this guide](#). The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2022). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our [Technical Documentation](#).

(Washington State Institute for Public Policy, 2023a)

APPENDIX D.3.B: PROJECT ALERT COSTS

Benefit-Cost Summary Statistics Per Participant			
Benefits to:			
Taxpayers	(\$80)	Benefits minus costs	(\$340)
Participants	\$13	Benefit to cost ratio	(\$18.06)
Others	(\$204)	Chance the program will produce	
Indirect	(\$51)	benefits greater than the costs	45%
Total benefits	(\$322)		
Net program cost	(\$18)		
Benefits minus cost	(\$340)		

For an overview of WSIPP's Benefit-Cost Model, please see [this guide](#). The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2022). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our [Technical Documentation](#).

(Washington State Institute for Public Policy, 2023b)

APPENDIX D.3.C: PROJECT STAR COSTS

Benefit-Cost Summary Statistics Per Participant			
Benefits to:			
Taxpayers	\$954	Benefits minus costs	\$2,993
Participants	\$1,331	Benefit to cost ratio	\$41.37
Others	\$574	Chance the program will produce	
Indirect	\$208	benefits greater than the costs	72%
Total benefits	\$3,067		
Net program cost	(\$74)		
Benefits minus cost	\$2,993		

For an overview of WSIPP's Benefit-Cost Model, please see [this guide](#). The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2022). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our [Technical Documentation](#).

(Washington State Institute for Public Policy, 2023c)

APPENDIX D.3.D: POLICY EVALUATION MATRIX

Policy Options	Cost to the County	Impact of the Policy	Political Feasibility	Health Equity	Ease of Implementation	Total
Status Quo	1	3	1	3	1	9
The Life Skills Training (LST) Program	2	1	1	1	2	7
Project ALERT	1.5	2.5	1	1	2	8
Project STAR	2	1	1	1	2	9

APPENDIX D.3.E: STATUS QUO POLICY EVALUATION

Option #1: Status Quo		
Criteria	Total Score	Rationale
Cost to the County	1	No additional costs or funds would be needed for this option, making it the most cost-effective choice.
Impact of the Policy	3	There would be no improved impacts on health literacy in relations to illicit drug use among students.
Political Feasibility	1	No further regulatory or policy action would be necessary making this the most politically feasible option.
Health Equity	3	There would be no improvements to health equity in terms of inclusion and access to health literacy in relations to illicit drug use among students.
Ease of Implementing	1	This option would require no additional actions, making it easy to implement.

APPENDIX D.3.F: LIFE SKILLS TRAINING (LST) PROGRAM POLICY EVALUATION

Option #2: Life Skills Training (LST) Program		
Criteria	Total Score	Rationale
Cost to the County	2	This program requires moderate costs, resulting in a moderate cost to the county.
Impact of the Policy	1	This program has significant evidence substantiating its success and impact.
Political Feasibility	1	The County Commissioners have demonstrated support for addressing drug use in the community making this a politically feasible option.
Health Equity	1	This policy would result in a more equitable access of health literacy in relation to drug use and resources for middle and high school youth in Burke County improving the healthy equity or opportunity to be healthy.
Ease of Implementing	2	This option would require additional action, however the requirements for implementation are simple making it moderately easy to implement.

APPENDIX D.3.G: PROJECT ALERT POLICY EVALUATION

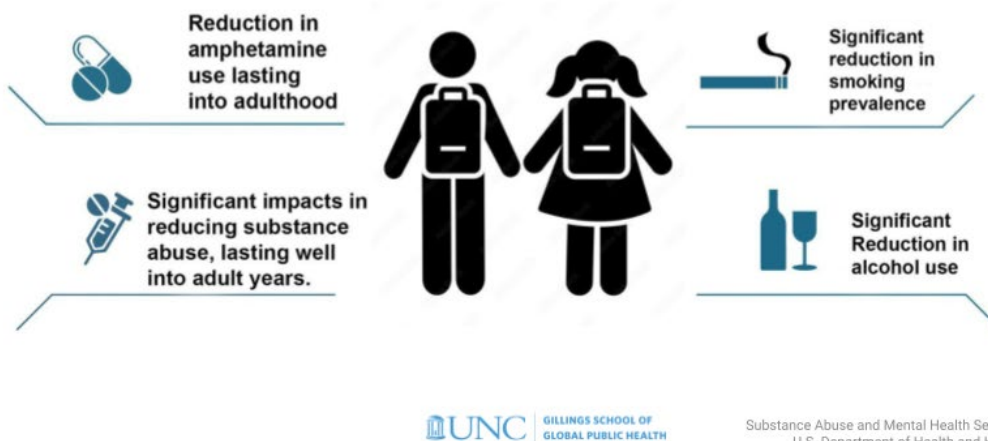
Option #3: Project ALERT		
Criteria	Total Score	Rationale
Cost to the County	1.5	This program requires low costs, resulting in a moderate cost to the county score.
Impact of the Policy	2.5	This program has demonstrated success but focuses on a limited number of stakeholders and only middle school students
Political Feasibility	1	The County Commissioners have demonstrated support for addressing drug use in the community making this a politically feasible option.
Health Equity	1	This policy would result in a more equitable access of health literacy in relation to drug use and resources for middle and high school youth in Burke County improving the healthy equity or opportunity to be healthy. It demonstrates inclusivity and impact in populations of color.
Ease of Implementing	2	This option would require additional action, however the requirements for implementation are simple making it moderately easy to implement.

APPENDIX D.3.H: PROJECT STAR POLICY EVALUATION

Option #4: Project STAR		
Criteria	Total Score	Rationale
Cost to the County	2	This program requires moderate costs, resulting in a moderate cost to the county score.
Impact of the Policy	1	This program has significant evidence substantiating its success and impact.
Political Feasibility	1	The County Commissioners have demonstrated support for addressing drug use in the community making this a politically feasible option.
Health Equity	1	This policy would result in a more equitable access of health literacy in relation to drug use and resources for middle and high school youth in Burke County improving the healthy equity or opportunity to be healthy. It also demonstrates effectiveness and inclusivity with high-risk and low-risk populations.
Ease of Implementing	2	This option would require additional action, however the requirements for implementation are simple making it moderately easy to implement.

Insights & Recommendations

Project STAR Prevention Program



Slide 8, *Mandolin McConaha*

We have the opportunity to make a significant impact on the issue of adolescent substance use by implementing Project STAR in Burke County. After a comprehensive review and evaluation of multiple drug prevention programs, we believe Project STAR is the most effective strategy to enhance health literacy related to illicit drugs and prevent drug abuse among our teens.

Project STAR is not just a program, but a community-wide movement that brings together schools, parents, the media, community leaders and policy makers. It has demonstrated significant success in other communities reducing alcohol consumption, smoking, amphetamines and illicit drug use, with these effects lasting into adulthood.

Insights & Recommendations

Project STAR Prevention Program

- **School-based Curriculum**
- **Policy Change**
- **Parent Involvement**
- **Community Engagement**
- **Media Campaign**

Program Settings	Information	Skills Development	Methods	Impacts
Community	Drug Trends	Social Skills	Media Campaign Policy Change	Stigma & Harm Reduction
School	Drug Effects	Resistance Skills	Prevention Curriculum Policy Change	Drug Use Reduction
Family	Drug Abuse Symptoms	Parenting Skills	Communication Parent-School Collaboration	Parent Engagement & Support



(Substance Abuse and Mental Health Services Administration, 2019; U.S. Department of Health and Human Services et al., 2003)

Slide 9, Mandolin McConaha

Project STAR empowers teens aged 12-18 to make informed decisions. This age group is at a critical stage because teens are highly susceptible to peer pressure and experimentation with illicit drugs, and this project is crucial for guiding them.

This program offers a robust, two-year school-based curriculum, facilitated by trained teachers and student peer leaders. This curriculum is designed to foster a culture of prevention, equipping our students with the knowledge they need to resist substance use.

What sets STAR apart is its commitment to policy reform and parental involvement. We believe in the power of community and understand that parents and community stakeholders play a crucial role in shaping a healthier future for our children. That's why parents and community stakeholders are actively involved in shaping policies and strategies that align with prevention best practices.

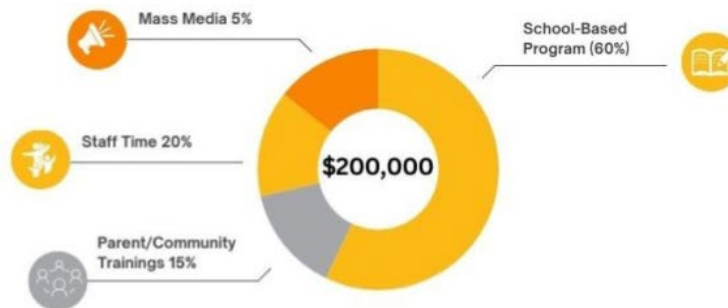
For Example, in Burke County Public School, this program will review and strengthen policies to ensure that struggling youth have a supportive environment and access to prevention resources.

At the community level, stakeholders and community leaders will review and strengthen policies related to healthcare access, treatment, law enforcement, community resources, and crisis response services to promote full community alignment.

Additionally, this program leverages the power of mass media to amplify our anti-drug message, encourage use of resources and reduce stigma.

Insights & Recommendations

Program Costs



Slide 10, Mandolin McConaha

While STAR requires an initial investment in training, program delivery, and evaluation, its long-term benefits outweigh the costs. We've done a thorough cost analysis and found that the estimated cost per participant is \$74 and approximately \$175,000 for over a 3-year period which includes teacher, parent, and community leader training, as well as curriculum materials for the school-based program.

Project Star is the foundation of our policy recommendation and is an investment in the future of our community. I will pass it to Fahim to talk about execution.

APPENDIX E: AHMAD FAHIM PIRZADA INDIVIDUAL DELIVERABLES

APPENDIX E.1. SOCIAL DETERMINANTS OF HEALTH ANALYSIS

Introduction

“Social determinants of health (SDOH) are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks” (Healthy People 2030, 2024, para.1). SDOH are grouped into five domains, Economic Stability, Education Access and Quality, Health Care Access and Quality, Neighborhood and Built Environment, and Social Community Context (Healthy People 2030, 2024).

Burke County in North Carolina experiences several social determinants of health disparities such as poverty, housing, transportation, and substance abuse according to the 2022 community health assessment (Burke County, 2022). Illicit drug use among the County’s middle and high school students, aged 12-18 years, is high (Burke County, 2022). Meanwhile, one of the objectives of Healthy People 2030 is to increase the health literacy of populations (Healthy People 2030, 2024); therefore, increasing health literacy among middle and high school students in Burke County can reduce and prevent illicit drug use. In the short term, illicit drug use impacts the students’ education, access to healthcare, and immediate well-being. However, in the long term, illicit drug use can contribute to chronic health conditions and overall life expectancy (Braveman and Gottlieb, 2014).

Geographic and Historical Context

Burke County is west of North Carolina (NC), covers 514 square miles of land, and has 13 townships and seven municipalities. The Catawba River, Lake James, South Mountain State Parks, Linville George, Table Rock and Shortogg Mountains, and Blue Ridge Parkway attract 1.5 million tourists yearly (Burke Community Health Assessment, 2022). Burke County was established and named in honor of Continental Congress Representative Thomas Burke when Rowan County was divided by the NC General Assembly bill in 1777 (Burke Community Health Assessment, 2022). Burke County (2024) has a diverse economy that includes industrial products from technological, furniture, medical, chemical, machine components, and textile manufacturers. Burke County is also home to the western campus of the North Carolina School of Science and Mathematics and Western Piedmont Community College (Burke County, 2024).

Demographics

Burke County has a total population of 90,418, consisting of 81.20 percent American Indians, 6.70 percent Hispanic/Latinx, 6.50 percent Non-Hispanic Black, 3.70 percent Asian, and 0.90 percent non-Hispanic White. Gender distribution comprises 50.30 percent men and 49.70 percent women (Burke County, 2022). The median age in the County is 44.30 (+/- 0.3) years, 4.80 percent is under 5 years, 18.70 percent is under 18 years, 81.30 percent is 18 years and over, and 20.10 percent is 65 years and over (Burke County, 2022). Burke County's demographic table can be referenced in **Appendix E.1.A**.

Areas of Concern

Substance abuse is one of the areas of concern in Burke County according to the County's Community Health Assessment (2022). The assessment indicates that middle and high school students, aged 12-18 years, are largely impacted; therefore, increasing health literacy among the students should be prioritized. Students' involvement in illicit drug use illustrates the low level of awareness and low health literacy among them. Illicit drug use "refers to the use and misuse of illegal and controlled drugs" (Centers for Disease Control and Prevention, 2022, para.1). The Pride survey conducted with Burke County middle and high school students in 2019 indicated that one in five students in Burke County confirmed using illicit drugs, a clear indication of low health literacy among the students. (Burke County, 2022). The County assessment indicates that the County remains one of the two counties with the highest rate of drug overdose deaths in North Carolina for six consecutive years from 2012 to 2019 (Burke County, 2022). According to the Centers for Disease Control and Prevention (2022), Median monthly overdose deaths among U.S. adolescents, aged 10–19 years, increased by 109 percent from July–December 2019 to July–December 2021- and deaths involving illicitly manufactured fentanyl (IMF) increased 182 percent. About 90 percent of deaths involved opioids, 84 percent involved IMFs, and counterfeit pills were also involved in nearly 25 percent of deaths (Centers for Disease Control and Prevention, 2022) (see **Appendix E.1.B** and **Appendix E.1.C**).

Priority Population

The priority population is Burke County public middle and high school students, aged 12-18 years. Burke County has five middle and four high schools that enrolled 2,508 middle and 3,763 high school students for the 2023-2023 academic year (Burke County Public Schools, 2024). All the public middle and

high school students should be targeted; however, schools in the areas of the county with the highest rates of drug overdose deaths are prioritized. Private school and homeschool students, and people not in the age range are excluded from the interventions.

Existing Policies and Programs

The Adolescent Prevention Services (APS) Program offers counseling services to students experiencing school, peer, and family problems related to alcohol and substance use at Burke County (Burke Recovery, n.d.) APS is part of the “Drug-Free Burke” policy which is a CDC-funded prevention program designed to support the initiatives of the Burke Substance Abuse Network (BSAN), a county-wide coalition that develops community engagement and responds to Burke residents’ needs (Burke Recovery, n.d.). Also, the program focuses on the reduction of underage non-medical use of prescription drugs by developing community outreach and delivering education presentations in schools and businesses (Burke Recovery, n.d.). Burke County’s resources list is provided in **Appendix E.1.D**.

Measures of SDOH

Burke County can measure health literacy among public middle and high school students related to illicit drug use by conducting pre-and-post-training surveys. The surveys include a questionnaire consisting of substance use, home life, psychiatric status, and school status. Students and their parents should be surveyed to understand their health literacy. Based on the results, health literacy training or awareness can be offered. A post-training survey should follow to measure health literacy outcomes related to illicit drug use.

The Pride survey conducted among Burke County public middle and high school students in 2019 can also be replicated with some modifications to measure health literacy. The Pride survey results indicated that the average age a student uses illicit drugs is 12.5 years, one in three students does not think drinking alcohol is dangerous, about 40 percent of students do not think vaping is harmful, almost half of the students think marijuana is not dangerous, and one in five students admits using illicit drugs (Burke Community Assessment, 2022).

Rationale

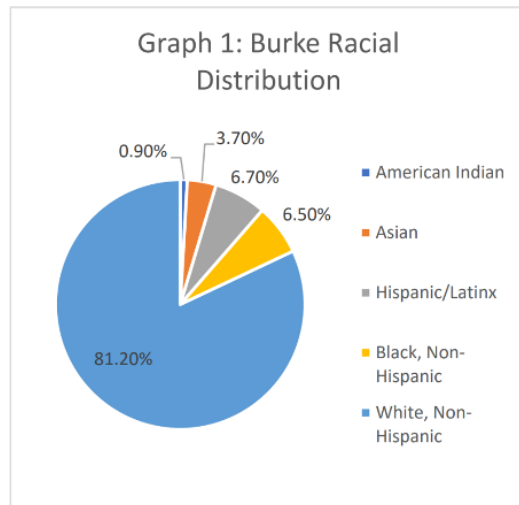
The Pride survey results indicated a low health literacy among Burke middle and high school students (Burke County, 2022); therefore, increasing health literacy related to illicit drug use among the

students is crucial to safeguarding their health, well-being, and academic success. Prevention efforts aim to protect students from the harmful consequences of drug abuse, including impaired cognitive function, mental health issues, and the potential for long-term addiction. By addressing the issue, Burke County can promote a safer and more conducive learning environment, fostering the overall development of students, reducing the societal burden of substance abuse, and setting the foundation for a resilient, drug-free future generation.

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APPENDIX E.1.A: Table 1: DEMOGRAPHICS OF BURKE COUNTY, NC, 2022



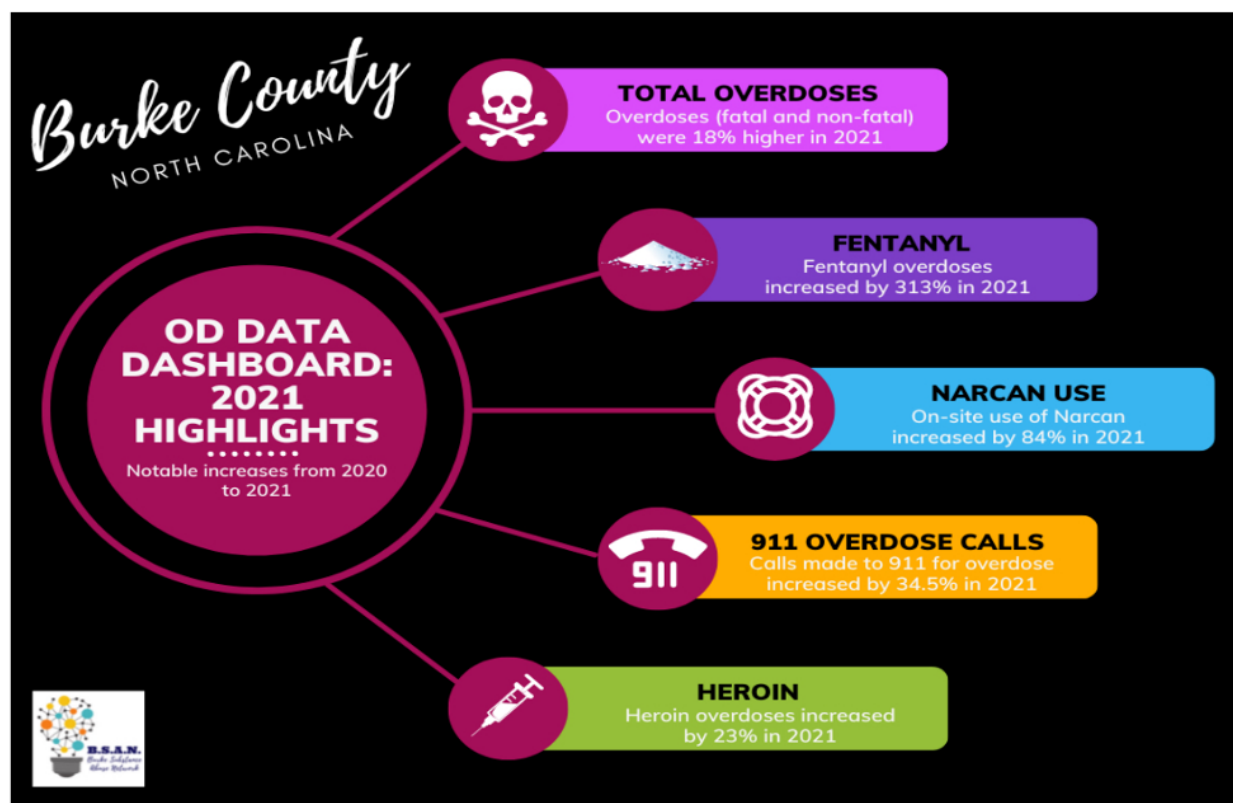
Graph 1 displays Burke County's most recent racial distribution. The data was sourced from 2022 County Health Rankings.



Graph 2 displays a population by age breakdown in Burke. This data along with Age and Sex was sourced from United States Census Bureau in the 2020 American Community Survey

Source: Burke County Community Health Assessment, 2022

APPENDIX E.1.B: BURKE COUNTY DRUG OVERDOSE HIGHLIGHTS 2021



Source: Burke County Community Health Assessment, 2022

County Profile: 2015-2019

Drug Overdose Mortality Rate

Deaths per 100k population
(Ages 15-64)

30.6	North Carolina Drug Overdose Mortality Rate
43.6	Appalachian Region Drug Overdose Mortality Rate
28.7	U.S. Drug Overdose Mortality Rate

135	89,968	Urban
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Total Deaths	Population	Urban / Rural
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SOCIO DEMOGRAPHIC

Burke County North Carolina Appalachian Region United States

Race /Ethnicity

White (non-Hispanic)	81.6%	63.1%	81.3%	60.7%
African American (non-Hispanic)	6.0%	21.1%	9.6%	12.3%
Hispanic or Latino	6.1%	9.4%	5.1%	18.0%
Other (non-Hispanic)	6.3%	6.5%	4.0%	9.0%

Age

Under 15	15.2%	18.5%	17.5%	18.7%
15-64	65.1%	65.6%	64.6%	65.6%
65+	19.7%	15.9%	18.0%	15.6%

Educational Attainment

At least High School Diploma (25+)	81.6%	87.8%	87.2%	88.0%
Bachelor's Degree or more (25+)	16.4%	31.3%	24.7%	32.1%

Disability Status

% Residents with a disability (18-64)	17.2%	11.3%	13.8%	10.3%
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ECONOMIC

Median Household Income	\$44,557	\$54,602	\$46,074	\$62,843
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Poverty Rate	18.1%	14.7%	15.2%	13.4%
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Unemployment Rate	7.4%	5.6%	5.4%	5.3%
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Accident-prone Employment

Construction	2.1%	4.9%	4.1%	4.8%
Mining	0.3%	0.7%	1.1%	1.3%
Manufacturing	25.7%	10.8%	13.1%	8.7%
Trade, Transportation, & Utilities	12.0%	19.0%	19.7%	18.9%

<https://overdosemappingtool.norc.org>

NORC
at the UNIVERSITY of CHICAGO



11

APPENDIX E.1.D: BURKE COUNTY COMMUNITY RESOURCES LIST-ENGLISH

Burke County Community Resource List

Burke County Health
Department 828-764-9150 700 E.
Parker Road Morganton, N.C. 28655
Health Director: Danny Scalise
828-764-9160

Burke County Department of Social Services
828-764-9600
700 E. Parker Road Morganton, N.C. 28655

Burke County United Way
828-433-0681 121 West
Union Street Morganton,
NC 28655

Burke County Sheriff's Department
828-438-5500

Emergency Assistance/Services
National Response Center & Terrorist Hotline
828-424-8802

Emergency Services
Burke County Sheriff's Office
Rutherford College 828-874-3400
Hildebran 828-397-4600
Morganton 828-322-5035
Emergency Management 828-433-6609
Burke County Rescue Squad
(For non-emergency) 828-437-0730

Emergency/Disaster Planning
American Red Cross 828-438-8844 or
828-437-1911 (nights / weekends /
Holidays)

Office of Emergency Medical Services
Poison Control Center 1-800-222-1222

Family/Financial Assistance
Applying for Public Assistance
Burke County Department of Social Services
828-764-9600
NC Family Health Resource – for Health
Check/Health Choice
1-800-367-2229 call

Emergency Aid to Families
Burke County United Way 828-433-0681
Salvation Army (Morganton) 828-430-8392
(Hickory) 828-322-8061

Employment Services
Employment Security Commission
828-438-6161

**Supplemental Security Income (SSI)
and Social Security Disability Income
(SSDI)**
Social Security Administration 1-800-772-1213

Legal Services
Legal Aid of NC –Morganton 828-437-8280 or
1-800-849-5195
Legal Services of North
Carolina 1-919-856-2564 NC
Bar Association (Raleigh)
1-800-662-7407

Lawyer Referral Service 1-800-662-7660

Medical Aid Services
Burke County Medicaid/Medicare
Services 828-439-2000 Burke County
Prescription Assistance 1-877-321-2652
Medicare Social Security
Administration 1-800-772-1213
Partnership for Prescription Assistance
1-888-477-2669

Food and Nutrition
Food Banks
Burke United Christian
Ministries 828-433-8075 The
Outreach Center 828-439-8300
United Way 1-888-892-1162

Soup Kitchen
Burke United Christian Ministries
828-433-8075

Women, Infants, and Children (WIC)
Nutrition Program Burke County
Health Department 828-764-9150

Meals and Nutrition Assistance for Elders
Valdese Community Center 828-879-2132
Blue Ridge Community Action, Inc.
828-438-6255 x226 Meals on
Wheels (Catawba County)
828-695-4435

Housing and Shelter
Energy and Utility Assistance
Burke United Christian
Ministries 828-433-8075 East
Burke Christian Ministries
828-397-7074

Home Heating Repairs and Weatherization
Blue Ridge Community Action, Inc.
828-438-6255 x226 Heating Appliance
Repair and Replacement Program (HARRP)

Public and Subsidized Housing
Habitat for Humanity of Burke
County 828-437-7844 Housing
Authority (Morganton)
828-437-9101
(Valdese) 828-874-0098

Assistance in finding low-cost apartments
Blue Ridge Community Action, Inc.
828-438-6255 x226

Transportation
**Transportation Assistance for Individuals
with Disabilities** Western Piedmont
Regional Transit Authority 828-464-9444
Handi-Care 828-437-8429
Specialized Transport
(Conover) 828-441-2000

Family and Community Health
Free Clinic
Good Samaritan Clinic 828-439-9948 or 9945

**Primary Care/Mental
Health/Substance
Abuse** Burke
Integrated Health
828-624-0300
Mountain Valley Health Center
828-433-0225

Valdese Family Medicine 828-874-1316
Burke Recovery 828-433-1221

**Child's Health, Care,
Development, and Support**
Burke County Health
Department 828-764-9150
Burke County Safe Kids
828-764-9219
Child Care Connections of Burke County,
Inc.
Infant/Toddler Enhancement
Project 828-439-2328 Child
Care Resources, Inc.
1-919-563-3331
Children's Developmental Services
Agency 828-432-5430 (Hickory)
828-466-5594
Early Intervention Services for the Deaf and
Hard of Hearing 828-438-5352 or
828-432-5430
Exceptional Children 828-439-4332
Instructional Assistance 828-433-1321
Family, Infant, and Preschool
Program 1-800-822-3477 Family
Place 828-433-2660 or 2661
The Riddle Institute 828-635-1479
NC Children's Special Health Services
Special Needs Helpline 1-800-737-3028
NC Family Health Resource
Line 1-800-367-2229 Health
Insurance for children and teens
Child Support
Child Support 828-764-9626
Child Support Payment - Information
1-800-992-9457

Daycare Services/Subsidies
Blue Ridge Community Action,
Inc. 828-438-6255 or Call Circle
of Friends Daycare 828-879-2367
Children's Resource Center (in Catawba
County) 828-328-8228 Generations Day
Care 828-758-4290 Ext 12 or 13 / 828-438-
6255 Ext 228/206

Women's Health/Support
Burke County Health Department
828-764-9150
Catawba Mammography Center
828-326-3858
NC Family Health Resource
Line 1-800-367-2229
(TTY) 1-800-976-1922
NC Breast & Cervical Cancer Control
Prog. 1-800-662-7030 (TTY)
1-877-452-2514
Women's Resource Center (Catawba)
828-322-6333

Men's Health
Burke County Health Department
828-764-9150
Family Counseling
Burke United Christian
Ministries 828-433-8075
Family Guidance
828-438-3880
Family Guidance Center (Hickory)
828-322-1400 Mimosa Christian
Counseling Center 828-433-5600 Repay,
Inc. (The Journey Counseling Center)
828-437-6268 or 828-438-6218
828-443-3270 (mobile)

Parents Support Services

Fitness/Wellness Center

Phifer Wellness Center 828-580-6600
Curves 828-430-7039
Quest4Life Wellness Center (Lenoir)
828-758-8753

Youth Services

Adolescent Services/Troubled Teens

National Runaway Switchboard
1-800-621-4000 or Instructional
Assistance 828-433-1321
Juvenile Justice and Delinquent
Prevention 828-433-7893 Parent
Resources Hotline 1-800-793-5156
North Carolina Cooperative
Extension 828-764-9480 Parent
Options- National 1-800-828-8173

Mentoring Programs

Burke County 4-H Foundation 828-439-4460
Big Brother/Sisters 828-430-8357
Repay, Inc. (Just Girls Program) 828-437-6268

Services for Youth with Disabilities

Mentally Handicapped: J. Iverson Riddle
Development Center 828-433-2731
Deaf Services: NC School for the
Deaf 828-432-5200 828-433-2901
(TTY) 828-432-5201

Teen Pregnancy

Pregnancy Care Center 828-437-4357

Adoption/Foster Care

Department of Social Services 828-764-9600
Foster Care Service 1-800-662-7030 ext 4622 or
1-919-733-4622
Foster Home Recruitment 828-438-3140
Home for Hearts, Inc. 828-430-3140
Act of Caring Adoption Facilitator
1-800-556-5635 Accredited
Adoption Attorney
1-800-637-2882
Adoption with Love 1-800-722-7731
Adoption Division -Catholic Social
Services (Charlotte)
1-704-370-6155

Senior Citizens Services

Blue Ridge Community Action, Inc.
828-438-6255 x230 (Quaker
Meadows Generations - Adult
Daycare) Burke County Senior
Center 828-430-4147
Burke County Transit Administration,
Inc. 828-438-0867 Morganton/Burke
Senior Center 828-430-4147
Senior Adult Information &
Referral 828-439-2096 American
Association of Retired Persons
(AARP) (Morganton)
828-430-4147
(Hickory) 828-328-2269
Toll Free 1-800-424-3410
Adult Life Programs, Inc. 828-324-1313
Medicaid 828-439-2000
Medicare/Social Security
Administration 1-800-772-1213
Western Piedmont Area Agency on
Aging 828-322-9191

Health Care Facilities

Burke County Literacy Council
828-437-7477

Blue Ridge Health Care

Grace Hospital 828-437-1275 828-580-5000

24-hour Emergency Service

828-580-6025

Valdese General Hospital 828-874-2251

24-hour Emergency Service

828-879-7532

Caldwell Memorial Hospital 828-757-5100

Catawba Valley Medical Center 828-326-3000

Frye Regional Medical Center 828-315-5000

Blue Ridge Health Urgent Care 828-580-3278

Mountain View Urgent Care 828-330-2103

Psalms Urgent Care Center 828-438-1117

Palliative Care

Burke County Hospice and Palliative Care

828-879-1601 or 828-893-0297

Caldwell Hospice and Palliative Care

828-754-0101

Disease Prevention (also call Health Care Facilities) Cancer Prevention and Control

American Cancer Society (Catawba)

828-328-3581 828-315-5668

1-800-227-2345 (1-800-ACS-2345)

American Lung Association 1-800-586-4872

Leukemia Society of America (Charlotte)

1-704-998-5012

Communicable Disease Control

Burke County Health Department

828-764-9150

NC Center for Disease Control 1-800-232-4636

Diabetes Prevention and Control

American Diabetes Association

(Raleigh) 1-919-743-5400 Or

1-888-342-2383 (1-888-DIABETES)

Burke County Health Department

828-764-9220

National Diabetes Information Clearinghouse

1-800-860-8747

Heart Disease and Stroke Prevention

American Heart Association 1-800-242-8721 or

(Charlotte) 1-704-374-0632

Immunization

Burke County Health Department

828-764-9150

Oral Health

Good Samaritan Clinic 828-439-9938

Sexually Transmitted Diseases (STD's)

Burke County Health Department

828-764-9150 AIDS Leadership

Foothills-Area Alliance (ALFA)

1-800-473-1447 or 828-326-2384 or 2385

(for free HIV Counseling and Testing)

AIDS & HIV Confidential Testing -

Next Day Results

1-800-501-9802

C.D.C. National AIDS Hotline

Toll Free (24 hrs) 1-800-342-2437

SIDA (In Spanish) 1-800-344-7432

Text Telephone (TDD) 1-800-243-7889

Other Services

Alzheimer's Association, Inc. 828-254-7363

Alzheimer's Association (Foothills

Area) 828-267-7100 Alzheimer's

Information and Referrals

1-800-272-3900 Epilepsy

Information Service 1-800-642-0500

Kidney Foundation - National

1-704-552-1351 or

1-800-356-5362

National Parkinson Foundation

1-800-522-8855

Alcohol, Tobacco, and Other Drugs

Alcohol and Other Drugs

Burke Council on Alcoholism and

Chemical Dependency, Burke

Recovery

828-433-1221

Addiction and Trauma Resolution

Helpline 1-800-505-0964 (24-hours)

Alcohol 24-hour Abuse & Crisis

Intervention Center

1-800-299-6310

Alcohol 24-hour Hotline and

Addiction Treatment

1-800-311-3069

24-hour Addictions Referral

Network 1-800-577-4714 National

Drug and Alcohol Treatment

Referral Hotline 1-800-662-4357

(1-800-662-HELP) National

Clearinghouse for Alcohol and Drug

Information 1-800-729-6686 or

1-877-767-8432 (Spanish line)

Celebrate Recovery @CUMC 828-294-6858
x208

Substance Abuse Prevention and Treatment

Burke Council on Alcoholism, Burke

Recovery 828-433-1221 Foot Hills Detox /

Crisis 1-800-942-1797 or 828-432-2846

McLeod Addiction Disease Center

828-464-1172

Repay, Inc. 828-438-6218

For Secure Continuous Remote

Alcohol Monitoring (SCRAM)

program, and Journey Counseling

Center National Substance Abuse

Helpline 1-800-662-4357

Smoking and Tobacco Use Prevention

National Quitline 1-800-7848-669

(1-800-QUIT-NOW)

Mental Health Services

Broughton Hospital 828-433-2111

Catawba Valley Behavioral

Healthcare 828-438-6226 Burke

Integrated Health 828-624-0300

Cognitive Connections 828-327-6026

Frye Regional Medical Center

Behavioral Healthcare

828-328-2226

Services for People with

Disabilities

Blind Services

Aid to the Blind 828-439-2000

Leader Dogs for the Blind 1-888-777-5332

NC Eye and Human Tissue Bank

1-336-765-0932 (Winston Salem,

NC)

NC Library for the Blind and Physically

Handicapped (Raleigh, NC)

1-888-388-2460 1-919-733-4376

NC Lions Foundation 1-800-662-7401

Deaf Services

NC School for the Deaf 828-432-5200 or
828-433-2901 (TTY) 828-432-5201
NC Division of Services for the Deaf and the Hard
of Hearing 1-800-999-8915 or 1-800-205-9920
(TTY)

NC Lions Foundation (for Hearing Aid)
1-800-662-7401 x224

Mentally Handicapped

J. Iverson Riddle Development Center
828-433-2731

Physically Handicapped

Independent Living Rehabilitation Program
828-322-2921 NC Library for the Blind and
Physically Handicapped (Raleigh, NC)
1-888-388-2460 1-919-733-4376

Rehabilitation Services

Western Regional Vocational Rehabilitation
828-433-2423

Other Services (Telephone Reassurance

Program) T.A.B (Telephone Assurance of Burke)
Program (Burke County Senior Center)
828-430-4147

Violence, Abuse, or Neglect

Child Abuse and Neglect

Abuse Treatment Program 828-438-3800
Burke County Department of Social Services
828-764-9600 For Emergency 828-438-5500
Burke County Child Neglect & Abuse Reports
Hotline 828-764-9600
National Child Abuse Hotline 1-800-422-4453

Rape/Sexual Assault

Burke United Christian Ministries 828-433-8075
Options, Inc. (24-hours) 828-438-9444
Aid to Victims of Sexual Assault
Rape Crisis & Domestic Violence
Rape Crisis Center of Catawba 828-322-6011
Careline-State Human Resources 1-800-662-7030

Crisis Counseling

Options, Inc. (24-hours) 828-438-9444
Careline - State Human Resources (Raleigh)
1-800-662-7030

Counseling – Criminal Justice

Repay, Inc. 828-438.6218
For Sentencing and Pretrial services, and Genesis
Project

Domestic Violence (Spouse Abuse)

Options, Inc. (24-hours) 828-438-9444
Family Guidance Center (Hickory) 828-322-1400
National Domestic Violence Hotline
1-800-799-7233 (24-hours) 1-800-787-3224 (Call
911 if you are in immediate danger) Care-Line
1-800-662-7030

Shelters

Options, Inc. (Battered Women Shelter 24-hours)
828-438-9444

The Meeting Place (Shelter for homeless men)
828-439-9921

**Violence Prevention and
Intervention Services**

Repay Inc. (Sexual Abuse Intervention Services)
828-437-6268

**Abuse and Neglect of Individuals with
Disabilities and Elderly Abuse or Exploitation**
Burke County Department of Social Services
828-764-9600

Veteran's Services

Burke County Veterans Services 828-439-4376
Disabled American Veterans (Raleigh)
1-919-833-5567 Veterans Regional Office
(Benefits & Information) 1-800-827-1000

Environmental Services

Burke County Health Department 828-764-9150 or
828-764-9240
Burke County Landfill 828-433-9500

Animal Control

Burke County Animal Control 828-438-5465
828-438-2782 BC Friends for Animals Adoption
Center 828-433-1115

Consumer/Other Services

Consumer Credit Counseling Service
828-438-3880 Consumer Product Safety
1-800-638-2772
Consumer Protection Section of Attorney General's
Office (Raleigh, NC) 1-919-716-6000
Federal Trade Commission (Consumer Advice)
1-877-382-4357 (TTY) 1-866-653-4261
ID Theft 1-877-438-4338
Burke County Chamber of Commerce
828-437-3021 Burke County Libraries
Hildebran 828-397-3600
Morganton 828-437-5638
Valdese 828-874-2421
Voter Registration 828-764-9010

Updated 11/28/16 C. Moore

APPENDIX E.2: CONCENTRATION DELIVERABLE 1: LEADERSHIP

Introduction

Social determinants of health (SDOH) are the social, economic, and physical conditions and systems in which people are born, live, work, and age (Centers for Disease Control and Prevention [CDC], 2022). These nonmedical factors significantly affect health, well-being, and quality of life, even more than healthcare access and genetic factors (CDC, 2022). Health literacy is an SDOH within the domain of social and community context that refers to individuals' ability to obtain, understand, and use information and services to make informed health-related decisions. Health literacy empowers individuals to critically evaluate information and adopt behaviors to improve their health (Stormacq et al., 2019).

Low health literacy among adolescents related to illicit drugs leads to an inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions (Yangyuen et al., 2021). North Carolina ranks 41st out of 50 states in health literacy (North Carolina Health Literacy, 2024), and Burke County adolescents demonstrate a lack of awareness of substance risks, with a significant percentage viewing alcohol, vaping, and marijuana as safe (Burke County Public Health, 2020). With one in five students in Burke County admitting to illicit drug use, Burke County Public Schools (BCPS) middle and high school students, aged 12-18 years, were identified as the priority population for increasing health literacy (Burke County Public Health, 2020). This focus is crucial as the drug overdose crisis disproportionately affects individuals with limited health literacy (CDC, 2023), and unintentional drug overdose mortality rates surging in Burke County (NCDHHS, 2021).

Leadership Alignment and Commitment

Improving health literacy related to illicit drugs among Burke County public middle and high school students (students) requires strong leadership and many stakeholders' engagement. Important and directly impacted stakeholders include Burke County's public middle and high school students, parents, school administrators, public school board representatives, county commissioners, county public health representatives, healthcare providers, law enforcement representatives, and community-based nonprofit and faith organizations (CBOs). The stakeholders need to offer collaborative leadership to improve health literacy related to drug use among the target population. Collaborative leadership involves leaders from

various sectors working together to make decisions and ensure the success of their organization (Joubert, 2019).

A steering committee made by the stakeholders could guide the efforts to improve health literacy related to drug use among the students. The steering committee should include a representative from each stakeholder group. For example, a county commissioner, a public health department representative, a healthcare provider, a public school board representative, a law enforcement representative, a middle school administrator, a high school administrator, a middle school student, a high school student, a parent, and a CBO representative should be members of the steering committee. **Appendix E.2. A** illustrates the collaborative leadership structure of the steering committee in a co-chair model to share power among the stakeholders.

Each steering committee member is significantly important and has an interest and influence in improving the target population's health literacy related to drug use. County commissioners can prioritize health literacy among the students and allocate the required funds. Burke County Public School Board is responsible for providing needed education support to schools and students by coordinating with the county and state leadership. High and middle school administrators are responsible for supporting teachers informing the school board of teachers and students' needs and implementing the school district's policies.

As directly impacted persons, middle and high school students' representatives are important steering community members for providing first-hand experience and advice on which intervention would work better with the students. Because middle and high school students are minors, a parent representative from middle and high school should be on the steering committee. Parents also play a significant role in providing parents' perspectives on health literacy for students. Some parents who need health literacy can also benefit. It is important to know at-risk students whose parents use illicit or prescription drugs.

Burke County Public Health Department representative should be a steering committee member to provide data on the use of illicit drugs among teens, teens' mortality rate, and advice on evidence-based health literacy interventions. A healthcare provider should be the steering committee member to provide medical advice and first-hand experience treating teenagers with illicit use and addictions. A community-

based organization's representative should be a member of the steering committee to provide the local community's socioeconomic and cultural information. Lastly, a law enforcement representative's inclusion in the steering committee is also important for providing insight into the legal consequences of dealing with illicit drugs.

Vision

To create a future where every Burke County Public Middle and High School student possesses robust health literacy, enabling them to understand, evaluate, and make informed choices regarding illicit drug use. Through targeted education, open dialogues, and evidence-based resources, the students can make informed decisions promoting a healthier and safer future for all.

Goals and Objectives

Goal 1: Develop an Evidence-Based Health Literacy Curriculum

Objective 1.1: Design a comprehensive curriculum that covers the risks, consequences, and alternatives to illicit drug use, incorporating the latest research and educational methodologies within six months of the start of the project (one to six months).

Objective 1.2: After the curriculum development, conduct teacher training programs within three months to ensure educators are well-equipped to deliver the health literacy curriculum effectively, fostering engaging and informative classroom discussions (from six to nine months).

Goal 2: Establish a Supportive School Environment

Objective 2.1: Throughout the school year, create safe spaces within schools for students to discuss drug-related topics openly, encouraging a culture of curiosity, understanding, and non-judgmental dialogue (ongoing).

Objective 2.2: After the curriculum development and teachers' training, start and maintain peer mentorship programs to facilitate student communication, promote community and support in navigating health-related challenges (after month nine and ongoing).

Goal 3: Enhance Community Outreach and Partnerships

Objective 3.1: Collaborate with local healthcare professionals to provide guest lectures, workshops, and resources that supplement the curriculum and offer diverse health and substance use perspectives (after month six and ongoing).

Objective 3.2: Establish partnerships with local law enforcement agencies to organize community events to raise awareness about the consequences of illicit drug use, emphasizing a collaborative approach to address the issue (after month nine, and then yearly).

Benefits of Improving Health Literacy Related to Illicit Drug Use Among Students

Improving health literacy related to illicit drug use among Burke County public middle and high school students yields multiple outcomes crucial for the well-being of the youth and the broader community. By promoting a comprehensive understanding of the risks associated with illicit drugs, the County Commissioners empower students to make informed decisions, contribute to a safer school environment, and build a foundation for a healthier future.

As the students gain a deeper understanding of the consequences of illicit drug use through health literacy, they are better equipped to critically evaluate situations, resist peer pressure, and make choices aligned with their well-being (Rolova et al., 2021). In addition, a direct and measurable outcome of effective health literacy initiatives is the potential reduction in substance abuse rates among middle and high school students (Kinnunen et al., 2022). Long-term data analysis may reveal a positive correlation between improved health literacy and decreased incidents of illicit drug use, contributing to the overall well-being of the student population (Rolova et al., 2021).

Furthermore, improving health literacy related to illicit drug use in middle and high schools establishes a supportive community within schools. It creates an environment where open discussions about drug-related topics are encouraged, and students feel more comfortable seeking guidance from expert educators, engaging in peer conversations, and accessing resources that promote mental and emotional well-being (Smith et al., 2021). A supportive community not only acts as a preventive measure against illicit drug use but also provides a safety net for those facing challenges, encouraging early intervention and support (Johnson et al., 2007).

As health literacy related to illicit drug use improves, teachers become better equipped to address the evolving consequences of illicit drug use among students. Teachers can adapt teaching methods to engage students effectively, ensuring that the information is accurate and resonates with the diverse needs of the student population (Lin et al., 2021). Additionally, informed parents become essential

partners in the effort, reinforcing the messages delivered in schools and actively participating in conversations about illicit drug use with their children (Lipari, 2007).

Ultimately, improving health literacy related to illicit drug use among students extends beyond the school years, influencing the broader public health aspects of social, physical, and mental well-being. A generation with strong health literacy related to illicit drug use can become a force for positive change in society by instilling values of responsibility, resilience, informed decision-making, prioritizing health, and well-being, and potentially reducing the burden on healthcare systems and law enforcement in the long run (Rolova et al., 2021).

Accountable Partners Roles

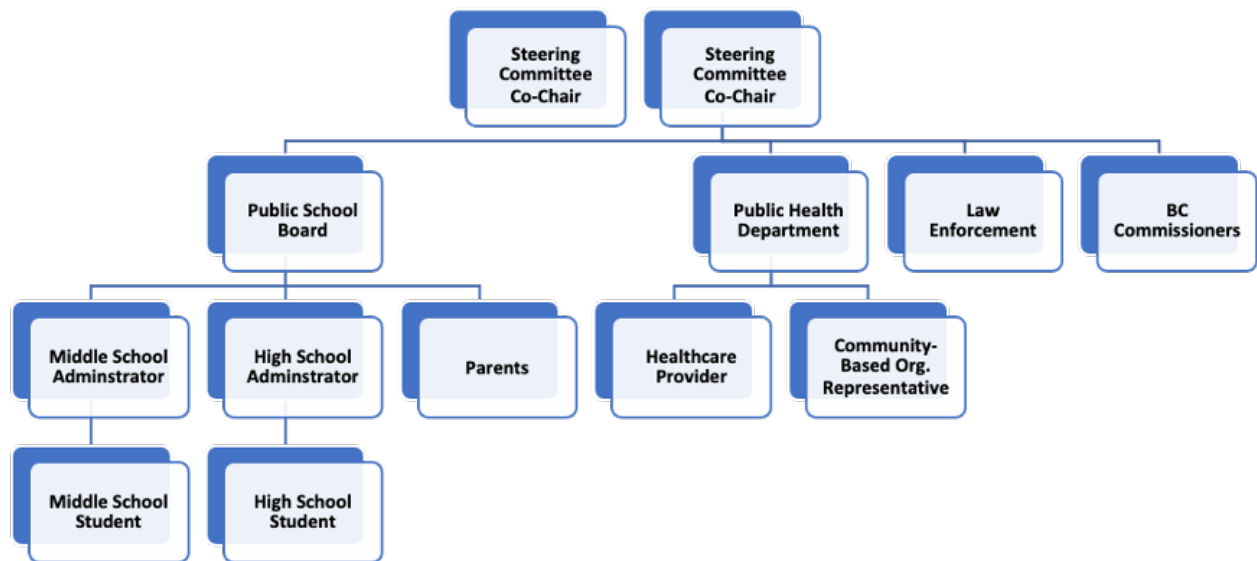
Each partner has a vital role, contributing to the holistic approach needed to improve health literacy related to illicit drug use among the target population. **Appendix E.2.B** provides the partners' role details.

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APPENDIX E.2.A: STEERING COMMITTEE COLLABORATIVE LEADERSHIP STRUCTURE



APPENDIX E.2.B: ACCOUNTABLE PARTNERS ROLES

Accountable Partner	Roles
County Commissioners	Prioritize health literacy related to illicit drug use among the students and provide funding
School District Board	Coordinate the health literacy efforts with the County Commissioners, County Department of Public Health, healthcare providers, and community partners.
School Administrators	Oversee implementation of the health literacy curriculum, provide resources, and support teachers
Teachers	Deliver the health literacy curriculum, facilitate discussion, and identify students in need
County Public Health Dept.	Offers evidence-based health literacy intervention, collaborates with school district board to integrate illicit drug-related health literacy into the curriculum, and ensures access to accurate information and resources for students and their families. In addition, supports community partnerships to address broader issues related to illicit drug use.
Healthcare Providers	Offer expertise in guest lectures, workshops, and additional resources
Law Enforcement (LE)	Involve LE in prevention (increasing health literacy) to improve people's perception; collaborate on community events; and provide insights on the legal consequences of drug abuse.
Parents/Guardians	Reinforce educational messages at home, actively engage in conversations, and acquire health literacy as needed
Students	Actively participate and encourage other peers to participate in the health literacy program, represent students in need, and promote open discussions about illicit drug use within their peer groups.
Local Community-Based Organization	Mobilize community support, provide local community perspectives, and advocate for health literacy initiative

APPENDIX E.3: CONCENTRATION DELIVERABLE 2: ENGAGEMENT

Introduction

Social determinants of health (SDOH) are the social, economic, and physical conditions and systems in which people are born, live, work, and age (Centers for Disease Control and Prevention [CDC], 2022). These nonmedical factors significantly affect health, well-being, and quality of life, even more than healthcare access and genetic factors (CDC, 2022). Health literacy is an SDOH within the domain of social and community context that refers to individuals' ability to obtain, understand, and use information and services to make informed health-related decisions. Health literacy empowers individuals to critically evaluate information and adopt behaviors to improve their health (Stormacq et al., 2019).

Low health literacy among adolescents related to illicit drugs leads to an inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions (Yangyuen et al., 2021). North Carolina ranks 41st out of 50 states in health literacy (North Carolina Health Literacy, 2024), and Burke County adolescents demonstrate a lack of awareness of substance risks, with a significant percentage viewing alcohol, vaping, and marijuana as safe (Burke County Public Health, 2020). With one in five students in Burke County admitting to illicit drug use, Burke County Public Schools (BCPS) middle and high school students, aged 12-18 years, were identified as the priority population for increasing health literacy (Burke County Public Health, 2020). This focus is crucial as the drug overdose crisis disproportionately affects individuals with limited health literacy (CDC, 2023), and unintentional drug overdose mortality rates surging in Burke County (NCDHHS, 2021).

Summary of Engagement 1

The National Association of County and City Health Officials (NACCHO) supports community-driven strategic planning through Mobilizing for Action through Planning and Partnerships (MAPP) (naccho.org, 2024). MAPP assists communities, including Burke County, in analyzing population health challenges, fostering broad participation, and aligning resources for health equity (naccho.org, 2024). The Steering Committee can create Burke County Health Literacy Community Catalysts (BCHLCC) to improve health literacy related to illicit drug use among middle and high school students aged 12-18. BCHLCC could collaborate with various stakeholders, including schools, parents, health departments, law

enforcement, nonprofits, and community organizations. BCHLCC will address illicit drug use among the target population, involving parents, leveraging school efforts, and partnering with entities like the Burke Literacy Council, Substance Abuse Network, and County Commissioners. Factors influencing equitable representation of stakeholders could include cultural competence, sensitivity to language differences (Tulane University School of Public Health, 2023), and addressing power dynamics and structural barriers (Andress et al., 2020).

Overall, improving health literacy related to illicit drug use among students through tailored communication strategies leads to better health outcomes and empowers students to make informed decisions about their well-being (8 Ways to Improve Health Literacy, 2014).

Purpose

The engagement strategy aims to encourage the stakeholders to work collaboratively to improve health literacy related to illicit drugs among Burke County public middle and high school students (students). The engagement strategy is also important to build trust among stakeholders who need to work together to bring about the desired change of increasing health literacy among the students to make informed decisions related to illicit drug use in Burke County. Koh (2012) explains that an engagement strategy builds community trust through transparent communication and collaboration. In addition, an engagement strategy encourages behavioral change by motivating individuals to adopt healthier behavior (Michie et al., 2011). The other benefit of the engagement strategy is to leverage social networks, and through utilizing social networks, amplify health messages and reach diverse populations (Valente, 2012).

In the long term, an engagement plan can help to keep stakeholders informed of the activities surrounding increasing health literacy among the students, make strategic decisions, keep track of decisions made, improve communication and clarity, reduce confusion or diverse interpretations of key issues, design strategic actions (strategic decisions), assign tasks, report decisions and actions, and, lastly, to establish trust between stakeholders (Rice, Week Five Module, 2023).

Priority Partner

Each community partner is significantly important when improving health literacy among the students to make wise choices on illicit drug use. However, as directly impacted persons, Burke County public middle and high school students should be the priority partners. The Pride survey conducted with

Burke County middle and high school students in 2019 indicated that one in five students in Burke County confirmed using illicit drugs, the average age a student uses illicit drugs is 12.5 years, one in three students does not think drinking alcohol is dangerous, about 40 percent of students do not think vaping is harmful, and almost half of the students think marijuana is not dangerous, a clear indication of low health literacy among the students (Burke Community Health Assessment [BCHA], 2022).

Engagement Barriers and Facilitators

Barriers to engaging students include:

1. *Stigma and Fear of Judgment*: students may be reluctant to engage due to the stigma associated with drug use, fearing judgment from peers or teachers (Hart & Ksir, 2019).
2. *Lack of Relevance Perception*: some students may perceive information irrelevant to their daily lives which can hinder engagement (Borzekowski & Rickert, 2001) so communication clarity is key.
3. *Parental Resistance*: parental concerns or resistance to discussing drug-related topics may affect students' willingness to engage (Miller-Day & Dodd, 2004).

Implementing the following strategies can help to overcome barriers to engaging students:

1. *Interactive Educational Programs*: implementing interactive and engaging educational programs by incorporating multimedia, group discussions, and real-life scenarios about the effects of illicit drugs (Birckmayer & Holder, 2001).
2. *Peer Education*: utilizing peer education programs to create a supportive environment and reduce stigma among students (Goodstadt et al., 2002).
3. *Tailored Health Literacy Information*: providing age-appropriate and culturally sensitive information that students can relate to, and making the content more relevant to their health behaviors are crucial (Borzekowski & Rickert, 2001).
4. *Student Leadership Role*: Allow student representatives to provide feedback on the content of educational materials and activities, and design and lead health campaigns by creating posters, videos, and social media messages.
5. *Involve Parents*: finally, fostering communication between parents and students by involving parents in educational initiatives and addressing their concerns (Miller-Day & Dodd, 2004).

Engagement Methods

Appendix E.3.A briefly describes engagement methods for community partners that include what to do, how to do, what are the potential barriers, how to facilitate barriers, and the timing format.

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APPENDIX E.3.A: ENGAGEMENT METHODS

Methods, Barriers/Facilitator, and Timing

Engagement Method	Related Barriers/Facilitators	Timing
Tailored Health Literacy Information (School Workshops)	Barriers: limited school resources, resistance from staff Facilitators: support from school administration, integration into the curriculum	Design; Improve Scheduled during health education classes
Interactive Educational Programs (Mobile Apps for Health Education)	Barriers: limited access to smartphones, digital literacy gaps Facilitators: provide devices with interactive and user-friendly interfaces	Design; Improve Ongoing accessibility, integrated into daily routines
Parental Involvement Programs (PIP)	Barriers: parental time constraints, lack of awareness Facilitators: school communication channels, incentives for participation	Improve Evening or weekends, well in advance of potential issues
Peer Education Program (PEP)	Barriers: Stigma, peer resistance, potential misinformation Facilitators: Training programs, peer leadership recognition	Design; Improve Integrated into regular school activities, ongoing peer support and education
Student Leadership Role	Barriers: Stigma, lack of skills, low confidence Facilitators: Teachers and parents support, training programs, student leadership recognition	Design; Improve Provide feedback on materials, conduct ongoing health campaign

Insights & Recommendations

Engagement Plan

Accountable Partners	Why to Involve	How to Involve
County Commissioners	Prioritize the Project; Provide Funding	Meetings; Emails
School District Board	Coordination between partners	Meetings; Emails
School Administrators	Project oversight; Provide resources and support	Workshops; Meetings; Emails, Events
Teachers	Deliver curriculum; Facilitate discussion; Identify students in need	Training; Integrate drug education into lessons; Emails; Events
Students	Peer education; Leadership Role	Peer-led campaign and education



Slide 11, Ahmad Fahim Pirzada

As discussed by my team member, Mandy, Project STAR is the foundation of our recommendation for increasing health literacy related to illicit drug use among the students in Burke County which requires several community partners' engagement.

The table shows some of the accountable community partners with the reasons and methods of engagement. For example, County Commissioners should engage to prioritize the project and provide funding. They can engage with other partners through meetings and emails.

As a target population, students should engage to promote drug-free lifestyles, organize peer-led education initiatives, and create safe spaces for all students to discuss drug-related issues. Students can engage through campaigns and individual and group education.

Insights & Recommendations

Accountability Plan: Performance Measures “STAR Program”



Slide 12, Ahmad Fahim Pirzada

The four performance measures ensure accountability in our proposed project. The project staff can assess the effectiveness of the “STAR Program” through a comprehensive set of measures that include process, output, outcome, and balancing metrics.

These measures aim to evaluate the project’s reach and success in achieving its goals.

- Process measures track changes made to increase health literacy and decrease illicit drug use.
- Output measures focus on quantifiable results such as producing educational materials, completing Pride surveys, and developing personalized drug cessation plans.
- The outcome measures the project’s impact on student’s health literacy and behaviors related to illicit drug use.
- While balancing measures parental complaints and financial implications, aiming to capture the wider consequences of implementing the program.

APPENDIX F: MASON ZEAGLER INDIVIDUAL DELIVERABLES

APPENDIX F1: SOCIAL DETERMINANTS OF HEALTH ANALYSIS

Introduction

Social determinants of health (SDOH) are the social, economic, and physical conditions and systems in which people are born, live, work, and age (Centers for Disease Control and Prevention [CDC], 2022). These nonmedical factors significantly affect health, well-being, and quality of life, even more than healthcare access and genetic factors (CDC, 2022). Health literacy is an SDOH within the domain of social and community context that refers to individuals' ability to obtain, understand, and use information and services to make informed health-related decisions. Health literacy empowers individuals to critically evaluate information and adopt behaviors to improve their health, and it is so important that the U.S. Department of Health and Human Services (n.d.) has established a national objective to increase the health literacy of the population (i.e., HC/HIT-R01).

People with low health literacy are more likely to experience difficulty obtaining needed services, understanding instructions from healthcare providers, and following directions (North Carolina Institute of Medicine, 2007). Low health literacy is also consistently associated with greater use of emergency care, more hospitalizations, poorer overall health status, and higher mortality rates (Berkman et al., 2011, Zhao-ya Fan & Zhang, 2021). Fortunately, health literacy can be increased through evidence-based interventions, and implementing such interventions among target populations can reduce negative health outcomes and health disparities and improve health equity (Stormacq et al., 2019).

Geographic and Historical Context

Burke is a rural county in western North Carolina that has a population of 90,418 people (Burke County, 2022). Burke County's population is majority White, Non-Hispanic (81.2 percent), and minority race/ethnicity groups include Hispanic/Latinx (6.7 percent), Black, Non-Hispanic (6.5 percent), Asian (3.7 percent), and American Indian (0.9 percent). From 2017-2020, 42 percent of the population had incomes under 200 percent of the federal poverty level (FPL), which is greater than the North Carolina average in 2023 (36.8 percent) (Burke County, 2022). The United States Census Bureau (n.d.) reports that from 2018-2022, 19.8 percent of the Burke County population aged 25 years or older had a bachelor's degree or higher and 84.8 percent were high school graduates. The University of North Carolina at Chapel Hill

(UNC-Chapel Hill) Health Literacy Data Map reveals that 25 percent or more of residents in each Burke County census tract have basic or below basic health literacy, which means they may be able to locate information in simple texts but struggle with complex health information (UNC-Chapel Hill, 2014). Burke County's demographic profile is important to understanding the prevalence of low health literacy in the county because low health literacy in rural areas may be explained by confounding variables, including race/ethnicity, income, and education (Zahnd et al., 2009).

The Burke County Wellness Initiative (BWI) is a committee led by the Burke County Health Department that seeks to improve health literacy in Burke County. The 2016 Burke County Community Health Needs Assessment states that, "The purpose and vision of the Burke Wellness Initiative is that Burke County embraces, educates and provides the opportunity to empower persons of all ages to make informed choices to live healthier lives" (Burke County, 2016, p. 4). BWI unites county agencies and community organizations to increase health literacy in Burke County through events, education, and data collection. BWI assists with creating the county's community health assessment and community health improvement plan (Burke County, 2022), so it is well-positioned to gather information and form or enhance initiatives to improve health literacy in Burke County.

Burke County kindergarten to 12th grade schools are key institutions that strive to increase health literacy among county residents. Burke County Public Schools (BCPS) are required to include health education as part of their instructional programs (North Carolina Department of Health and Human Services [NCDHHS], 2022), and schools are fundamental to increasing health literacy because developing personal health literacy starts early in life (CDC, 2022). However, public school systems in North Carolina may experience challenges providing adequate education and resources to increase health literacy among their students because they receive some of the lowest per-pupil funding from the state government compared to public school systems in other states (Farrie & Sciarra, 2022).

Priority Population

BCPS middle and high school students are the priority population for increasing health literacy in Burke County. These students exhibit low health literacy related to illicit drugs and many already use them (Burke County, 2022). This is particularly alarming since people with limited health literacy are

disproportionately affected by the drug overdose crisis (CDC, 2023), and unintentional drug overdose mortality rates are rapidly increasing in Burke County (see **Appendix F.1.A**) (NCDHHS, 2021).

There are 12,035 students enrolled in BCPS for the 2022-2023 school year. BCPS includes five middle schools and five high schools, which have an average enrollment of 502 and 753 students for the 2022-2023 school year, respectively (North Carolina Department of Public Instruction, n.d.), and the 2021-2022 high school graduation rate was 88 percent (Burke County, 2022). The majority of BCPS students are White, as shown in **Appendix F.1.B** (U.S. News & World Report, 2024), and 65 percent students are eligible for free lunch (Burke County, 2022), which indicates their families' incomes are below 130 percent of the FPL (United States Department of Agriculture, 2023). These demographics should be considered when designing an intervention to increase health literacy among BCPS middle and high school students.

Students not enrolled in BCPS middle and high schools and BCPS elementary school students are excluded from the priority population because there is no published data on the health literacy related to illicit drug use of these students. Additionally, non-BCPS schools enroll far fewer students (Burke County, 2022), and most of the evidence-based programs and survey instruments related to illicit drugs are not designed for elementary school students.

Measures

In 2019, the Pride survey, which produces valid and reliable data on adolescent drug use, was conducted among BCPS middle and high school students (International Survey Associates, 2018; Burke County, 2022). The results revealed that one third of students did not think drinking alcohol is dangerous and almost half of students did not think marijuana is dangerous. Additionally, one out of five students admitted to using illicit drugs (Burke County, 2022). In comparison, the Substance Abuse and Mental Health Services Administration (2020) reports the average annual percentage of past-month illicit drug use among youth ages 12-17 was only 8.3 percent in North Carolina and 8.2 percent in the United States between 2017-2019 (see **Appendix F.1.C**).

The effectiveness of an evidence-based intervention implemented to improve the health literacy related to illicit drugs of BCPS middle and high school students can be validated using the Pride survey. The intervention's effect on the rate of drug overdose deaths among BCPS middle and high school students should also be assessed because the drug overdose death rate was higher in Burke County

than in surrounding counties from 2015-2019 (see **Appendix F.1.D**) (National Opinion Research Center's Walsh Center for Rural Health Analysis, n.d.). This can be accomplished by collecting longitudinal data from existing public health drug overdose data sources, like the Vital Registry System of the State Center for Health Statistics (NCDHHS, 2021).

Rationale

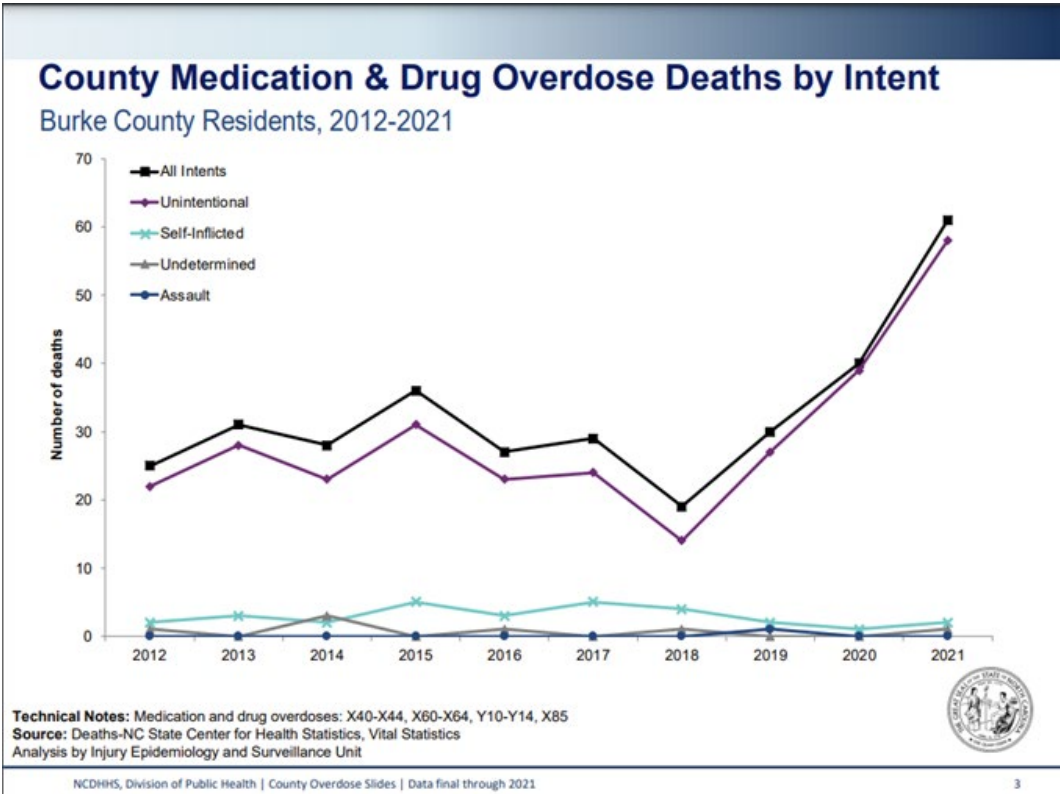
Health literacy is an important SDOH that can be improved through evidence-based interventions. Low health literacy is common in Burke County, and it may contribute to the county's rapidly increasing unintentional drug overdose mortality rates. BCPS middle and high school students demonstrate low health literacy related to illicit drugs, so they are an ideal target population for an intervention to increase health literacy. BWI and BCPS should implement an intervention among these students that incorporates methods to monitor and disseminate data that demonstrates its effectiveness in producing positive outcomes, including increasing in health literacy related to illicit drugs and reducing illicit drug use and unintentional drug overdose deaths among students.

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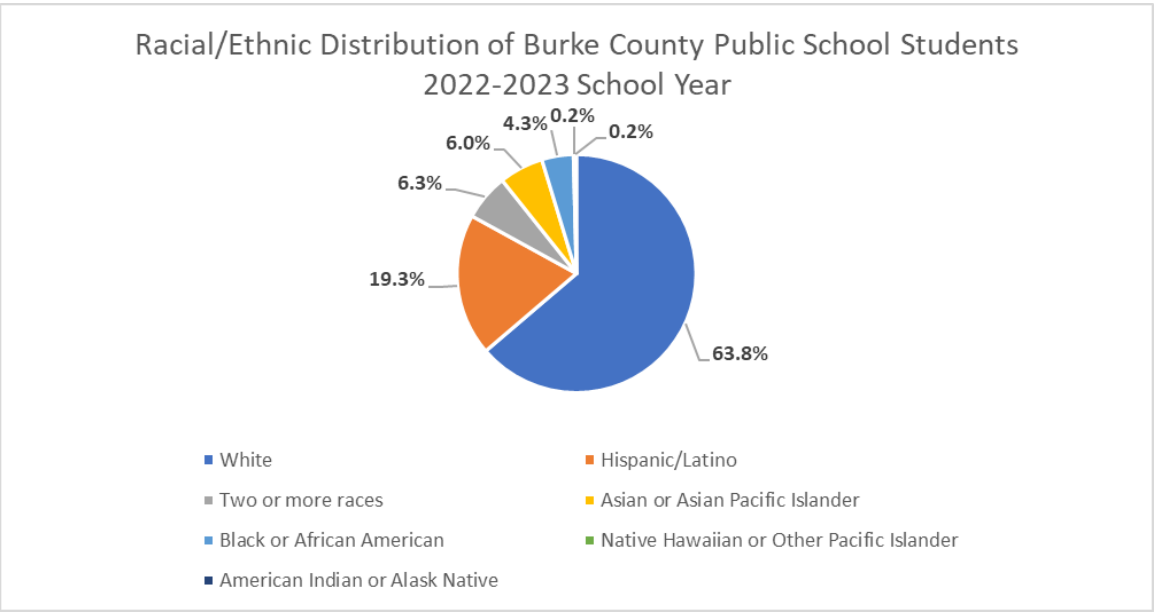
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APPENDIX F.1.A: COUNTY MEDICATION & DRUG OVERDOSE DEATHS BY INTENT, BURKE
COUNTY RESIDENTS, 2012-2021



Source: NCDHHS, 2021

**APPENDIX F.1.B: RACIAL/ETHNIC DISTRIBUTION OF BURKE COUNTY PUBLIC SCHOOL
STUDENTS 2022-2023 SCHOOL YEAR**



Data source: U.S. News & World Report, 2024

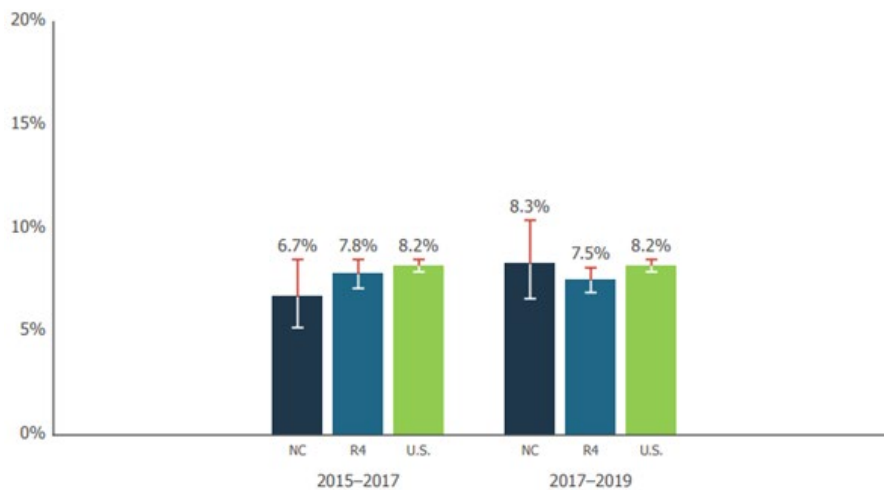
APPENDIX F.1.C: CHANGES IN PAST-MONTH ILLICIT DRUG USE AMONG YOUTH AGED 12-17 IN NORTH CAROLINA, REGION 4, AND THE UNITED STATES (ANNUAL AVERAGES, 2015-2017 AND 2017-2019)

Changes in Past-Month Illicit Drug Use among Youth Aged 12–17 in North Carolina, Region 4, and the United States (Annual Averages, 2015–2017 and 2017–2019)¹



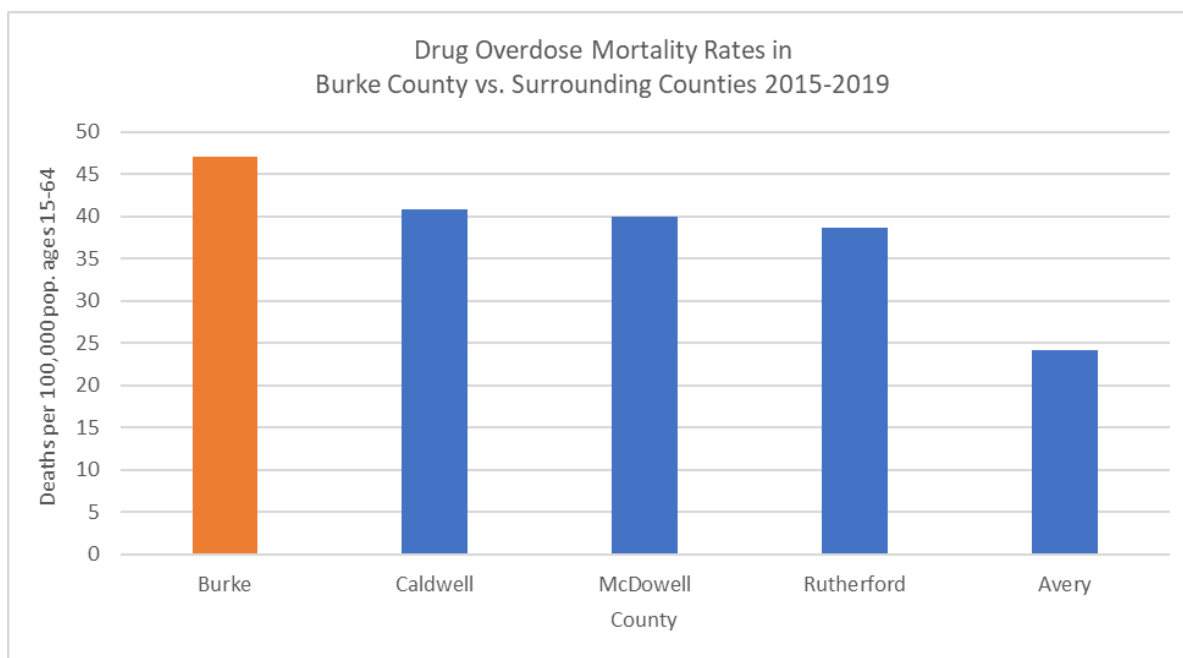
Among youth aged 12–17 in North Carolina, the annual average percentage of illicit drug use in the past month did not significantly change between 2015–2017 and 2017–2019.

During 2017–2019, the annual average prevalence of past-month illicit drug use in North Carolina was **8.3%** (or **66,000**), similar to both the regional average (**7.5%**) and the national average (**8.2%**).



Source: SAMHSA, 2020

**APPENDIX F.1.D: DRUG OVERDOSE MORTALITY RATES IN BURKE COUNTY VS. SURROUNDING
COUNTIES 2015-2019**



Data source: National Opinion Research Center's Walsh Center for Rural Health Analysis, n.d.

APPENDIX F.2: CONCENTRATION DELIVERABLE 1: QUALITY

Introduction

Social determinants of health (SDOH) are the social, economic, and physical conditions and systems in which people are born, live, work, and age (Centers for Disease Control and Prevention [CDC], 2022). These nonmedical factors significantly affect health, well-being, and quality of life, even more than healthcare access and genetic factors (CDC, 2022). Health literacy is an SDOH within the domain of social and community context that refers to individuals' ability to obtain, understand, and use information and services to make informed health-related decisions. Health literacy empowers individuals to critically evaluate information and adopt behaviors to improve their health (Stormacq et al., 2019).

Low health literacy among adolescents related to illicit drugs leads to inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions (Yangyuen et al., 2021). North Carolina ranks 41st out of 50 states in health literacy (North Carolina Health Literacy, n.d.), and Burke County adolescents demonstrate a lack of awareness of substance risks, with a significant percentage viewing alcohol, vaping, and marijuana as safe (Burke County, 2022). With one in five students in Burke County admitting to illicit drug use, Burke County Public Schools (BCPS) middle and high school students, aged 12-18 years, were identified as the priority population for increasing health literacy (Burke County, 2022). This focus is crucial as the drug overdose crisis disproportionately affects individuals with limited health literacy (CDC, 2023), and unintentional drug overdose mortality rates surging in Burke County (NCDHHS, 2021).

Project Overview

The Burke County Health Department (BCHD) was only recommended for Conditional Accreditation due to unmet activities. One of the unmet activities, Activity 10.2, indicated that BCHD lacked evidence of an evaluation of educational materials developed and targeted to an at-risk group identified in the community health assessment (Jarrell et al., 2023). In the 2022 Burke Community Health Assessment, BCHD identifies BCPS middle and high school students as an at-risk group for substance use because they demonstrate low health literacy related to illicit drugs (Burke County, 2022). To prevent illicit drug use and drug overdose deaths in Burke County and address the unmet activity for full

accreditation, BCHD will assist BCPS in the development, implementation, and evaluation of a program to increase health literacy related to illicit drugs among BCPS middle and high school students.

The project will be titled “Knowledge is Power: Increasing Health Literacy to Promote Drug-free Schools and Save Lives in Burke County.” The lack of effective educational content and approaches that connect students with existing community resources and partners is leading to low health literacy related to illicit drugs among BCPS middle and high school students. Through “Knowledge is Power,” BCHD will create and lead a program that leverages evidence-based educational materials and strategies and connects students with community partners and resources through educational sessions to increase their health literacy related to illicit drugs. By July 2025, BCHD will decrease the number of students who do not believe illicit drugs are dangerous by 50 percent and complete an evaluation of the accessibility and acceptability of the educational materials and informational sessions implemented during the program.

Stakeholders

Internal and external stakeholders will be critical to the success of “Knowledge is Power,” and each of the stakeholders associated with the project are categorized as internal or external in **Appendix F.2.A**. BCPS middle and high school students are the beneficiaries of the project, and they are a key internal stakeholder group because their input will guide how the project is designed and the iterative changes made to improve its reach and impact. The other internal stakeholders are the BCHD project staff and the BCPS middle and high school administrators and teachers. The BCHD project staff will design the project, develop the educational materials, coordinate engagement with other stakeholders, provide the tools and guidance for collecting input and data from students, and evaluate the project’s impact. The BCHD project staff will rely on the Pride survey, which produces valid and reliable data on adolescent drug use (International Survey Associates, 2018), to measure the health literacy and use of illicit drugs among the BCPS students. The BCHD project staff will also develop a separate survey to gather student feedback each quarter (i.e., every nine weeks) during the 2024-2025 academic year. The administrators and teachers will assist the BCHD project staff with disseminating information to students, collecting feedback and data from students, and ensuring students participate in the project activities, which will include educational sessions led by a variety of community partners.

The project should incorporate a range of community partners because research indicates that adolescent substance abuse can be prevented through community-based programs that engage a variety of stakeholders that deliver consistent and comprehensive messages to students (Griffen & Botvin, 2010). The project's community partners are external stakeholders, and they include county agencies and organizations whose missions or activities align with the aim of the project. The Burke County Sheriff's Office, Burke County Department of Social Services, and the Burke Substance Abuse Network will be incorporated because they seek to educate and provide services to treat and prevent substance use among adolescents (Burke County, 2019; Burke Substance Abuse Network, 2023). These stakeholders will engage in "Knowledge is Power" by leading educational sessions, contributing to the educational materials, and assisting with creating personalized plans to help students stop using illicit drugs.

The remaining external stakeholders of this project include the Burke County Board of Education, BCHD leadership, and parents of BCPS students. These stakeholders will oversee the internal stakeholders who implement or benefit from the project, and they will provide feedback when necessary. BCHD may collaborate with these stakeholders to ensure the project is financially supported and aligns with their expectations of how students should be educated about illicit drugs.

An influence-interest matrix is a tool that can help project leaders prioritize stakeholders and determine the level of intensity at which they should be engaged. The matrix creates four categories that provide direction for how to engage stakeholders based on their level of influence and interest in the project (see **Appendix F.2.B**) (Silver et al., 2016). Key players are the stakeholders that have high influence and interest in the project, and this category includes each of the project's internal stakeholders and parents of BCPS students. As the project is developed and implemented, the project team should ensure they meet the needs of the Burke County Board of Education and BCHD leadership and show consideration to the needs and input from the Burke County Sheriff's Office, Burke County Department of Social Services, and Burke County Substance Abuse Network.

Performance Measures

The BCHD project staff will track the performance of "Knowledge is Power" using a predetermined set of key output, process, outcomes, and balancing measures, which are listed in **Appendix F.2.C**. These measures will assist the BCHD project staff with evaluating the reach and effectiveness of the

project in achieving its aim. Output measures are the quantifiable results or deliverables produced by the project, and there are three primary output measures for this project: the number of educational materials produced by BCHD, the number of Pride surveys completed at the beginning and end of the program, and the number of personalized plans to stop using illicit drugs developed during the project. The outcome measures of the project will demonstrate its ability to increase students' health literacy and health behaviors related to illicit drugs. Process measures capture the changes made to increase health literacy and decrease illicit drug use among students, which includes the percentage of students who attended educational sessions, received educational materials and private counseling, and completed each of the surveys. Balancing measures include the number of complaints BCPS receives from parents about the program and the unintended financial costs or savings accrued, and they seek to capture the consequences of implementing the program.

Root Causes

There are many root causes that may contribute to the lack of effective educational content and approaches that engage students with relevant local community partners and resources. The “Knowledge is Power” fishbone diagram identifies many possible causes for the problem it seeks to address and sorts them into useful categories (see **Appendix F.2.D**). An example of a root cause is that BCPS teachers are pressured to focus on educating students on tested subjects because they want to maximize the exam scores of their students, which leaves less time to focus on increasing their students' health literacy related to illicit drugs. Parental expectations of what should be taught may be incongruent with evidence-based materials and approaches, and parents or other community members may also not be aware that providing information about illicit drugs and how they cause harm can be protective for students' health. The BCHD project staff and BCPS administrators and teachers should address these and other root causes that are discovered through the EBCD process as the project is designed, implemented, and evaluated.

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APPENDIX F.2.A: “KNOWLEDGE IS POWER” INTERNAL AND EXTERNAL STAKEHOLDERS

“Knowledge is Power” Internal and External Stakeholders	
Type	Stakeholder
Internal	BCPS middle and high school administrators
	BCPS middle and high school teachers
	BCHD project staff
	BCPS middle and high school students
External	Parents of BCPS middle and high school students
	BCHD leadership
	Burke County Board of Education
	Burke Substance Abuse Network
	Burke Recovery
	Burke County Sheriff's Office
	Burke County Department of Social Services
	Burke County Board of Commissioners

APPENDIX F.2.B: “KNOWLEDGE IS POWER” STAKEHOLDER INFLUENCE-INTEREST MATRIX

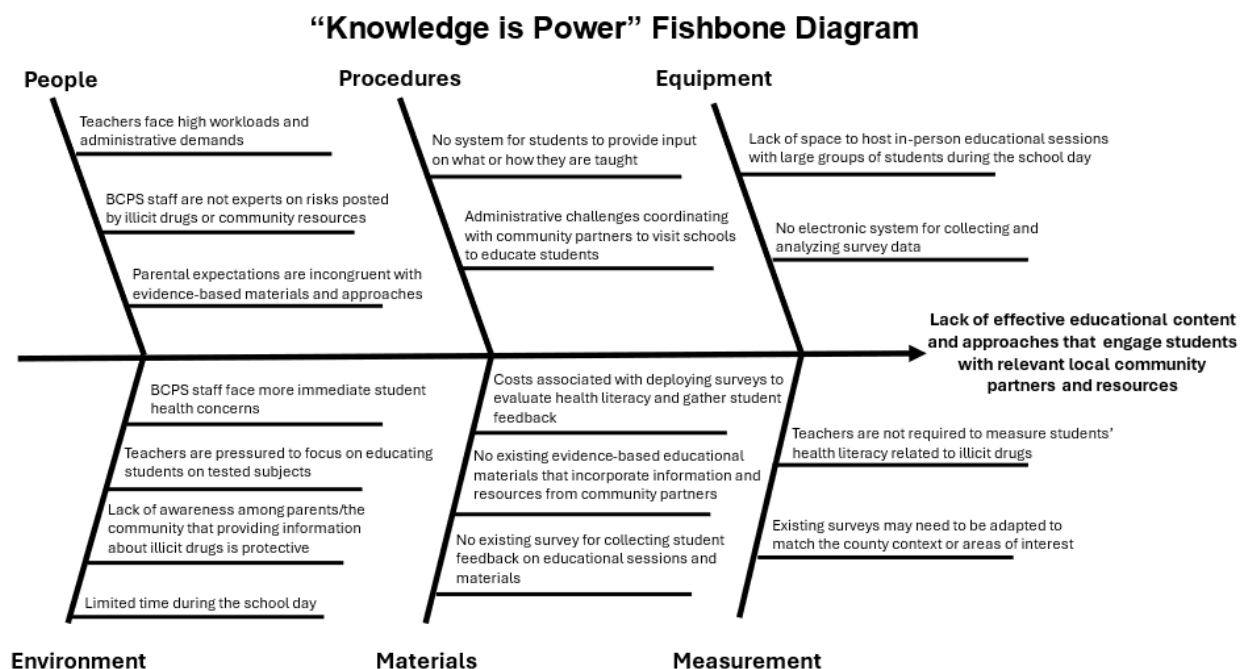
**“Knowledge is Power”
Stakeholder Influence -Interest Matrix**

<p>High Influence/Low Interest <u>Meet their needs</u></p> <p>Burke County Board of Education</p> <p>BCHD leadership</p>	<p>High Influence/High Interest <u>Key Player</u></p> <p>BCPS administrators</p> <p>BCPS teachers</p> <p>BCHD project staff</p> <p>BCPS students</p> <p>Parents of BCPS students</p>
<p>Low Influence/Low Interest <u>Keep informed minimally</u></p>	<p>Low Influence/High Interest <u>Show consideration</u></p> <p>Burke County Sheriff's Office</p> <p>Burke County Department of Social Services</p> <p>Burke Substance Abuse Network</p>

APPENDIX F.2.C: “KNOWLEDGE IS POWER” PERFORMANCE MEASURES

“Knowledge is Power” Performance Measures	
Category	Measure
Process	The percentage of students who attend 80 percent or more of the educational sessions.
	The percentage of students who receive educational material related to the dangers of illicit drugs and/or community partners and resources.
	The percentage of students who report using illicit drugs that receive private counseling from a qualified peer support specialist or medical professional.
	The percentage of students who completed each of the project’s surveys and feedback forms.
Output	The number of educational materials developed, implemented, and evaluated by BCHD.
	The number of Pride surveys completed by students at the beginning and the end of the project.
	The number of personalized plans to stop using illicit drugs developed with students during the project.
Outcome	The percentage of students who report using illicit drugs at the beginning of the program who stop or develop a personalized plan to stop using illicit drugs.
	The percentage of students who report monthly or more frequent use of illicit drugs.
Balancing	The number of complaints received from parents about the program and its curriculum.
	The dollar amount of unanticipated financial costs or savings accrued by implementing the program.

APPENDIX F.2.D: “KNOWLEDGE IS POWER” FISHBONE DIAGRAM



APPENDIX F.3: CONCENTRATION DELIVERABLE 2: SYSTEMS

Introduction

Social determinants of health (SDOH) are the social, economic, and physical conditions and systems in which people are born, live, work, and age (Centers for Disease Control and Prevention [CDC], 2022). These nonmedical factors significantly affect health, well-being, and quality of life, even more than healthcare access and genetic factors (CDC, 2022). Health literacy is an SDOH within the domain of social and community context that refers to individuals' ability to obtain, understand, and use information and services to make informed health-related decisions. Health literacy empowers individuals to critically evaluate information and adopt behaviors to improve their health (Stormacq et al., 2019).

Low health literacy among adolescents related to illicit drugs leads to inadequate understanding of the associated health risks, which limits their ability to comprehend and evaluate substance-related information and make informed decisions (Yangyuen et al., 2021). North Carolina ranks 41st out of 50 states in health literacy (North Carolina Health Literacy, n.d.), and Burke County adolescents demonstrate a lack of awareness of substance risks, with a significant percentage viewing alcohol, vaping, and marijuana as safe (Burke County, 2022). With one in five students in Burke County admitting to illicit drug use, Burke County Public Schools (BCPS) middle and high school students, aged 12-18 years, were identified as the priority population for increasing health literacy (Burke County, 2022). This focus is crucial as the drug overdose crisis disproportionately affects individuals with limited health literacy (CDC, 2023), and unintentional drug overdose mortality rates surging in Burke County (NCDHHS, 2021).

Systems 1 Summary

The project will seek to improve the system to increase health literacy among BPCS middle and high school students. Individual- and community-level factors contribute to low health literacy related to illicit drugs among these students, including limited education and awareness of drug use risks and consequences and stigma associated with illicit drug use. Currently, schools deploy punitive strategies to deter students from using illicit drugs on campus (i.e., school suspensions), which results in decreased engagement with school and educational resources. These strategies further exacerbate the underlying health issue, which is limited access to resources and information to increase health literacy related to illicit drugs among the students. BCPS and other community stakeholders must address the root causes

of the health issue rather than quick fixes that provide temporary relief or shift the burden. Developing a targeted intervention for BCPS middle and high school students that provides access to accurate health literacy education and community resources related to illicit drugs will equip them with the knowledge and skills they need to make informed decisions, resist external pressures to use illicit drugs, and face fewer out of school suspensions. Modifying punitive school policies and providing health literacy programming are critical leverage points that stakeholders should consider as they seek to address this health issue.

Co-design Scope and Objectives

The project management team should seek to engage BCPS middle and high school students and stakeholders in Burke County to co-design solutions to increase the health literacy of the students. Co-designing solutions will enable the project team to integrate the perspectives, processes, and resources of community stakeholders to implement public health solutions that are acceptable, feasible, adaptable, and sustainable (Vargas et al., 2022). The co-design process to address the health issue will engage stakeholders who are integral to the system to increase health literacy among BCPS middle and high school students, including the students and their parents, BCPS administrators and teachers, the Burke County Health Department (BCHD), the Burke County Substance Abuse Network (BSAN), and the Burke County Sheriff's Office. **Appendix F.3.A** lists each stakeholder type and a rationale for why they are essential to the co-design process. These stakeholders have vested interests in increasing health literacy among BCPS middle and high school students, as well as skills, resources, or perspectives that will influence how the health issue is addressed.

An experience-based co-design (EBCD) process should be used to gather input from each stakeholder and integrate their experiences to design, implement, and test improvements to increase health literacy among BCPS middle and high school students. EBCD is the most appropriate co-design process to formulate potential solutions for this health issue because it uses a narrative-based approach with service design methods that will enable the students (i.e., the service users) and the relevant community stakeholders to work together to create solutions (The Point of Care Foundation, n.d.). The goal of using EBCD will be to shift the balance of power so that students can influence the potential solutions implemented. The objective for the initial phase of the EBCD process will be to unite the project team, target population, and community stakeholders in a collaborative effort to address the health issue,

and it will span one-to-two days. Over the course of the initial phase of the EBCD process, the project team will collect user experiences to further define the parts or characteristics of the system that should be addressed and identify the stakeholders that will be responsible for collaborating to design, test, and evaluate system improvements.

Co-Design Principles and Process

The project team should support members of the target population and community stakeholders to establish a common agenda, shared measurement, mutually reinforcing activities, and continuous communication through the co-design process. By doing so, the project team will foster the conditions for collective impact and identify solutions that will be successful in the complexity of the system they seek to address (Kania & Kramer, 2013). The process should be guided by four key principles: participation, development, ownership and power, and outcomes and intent (Beacon Strategies, 2022). Each of these principles should be prioritized throughout the co-design process to ensure participants are engaged, understand their role, and know their input will be respected and used to create and evaluate potential.

The EBCD process will include an introductory group session in which participants meet each other and learn about the other steps of the process. The project team should lead the introductory group session and communicate their roles as facilitators for the remainder of the co-design process. The project team should use this session to explain the methods they will deploy to address power imbalances such that all participants, and especially students, feel supported in expressing their opinions and experiences honestly. The project team will also communicate a clear vision for how the co-design process will help participants achieve the shared goal of increasing health literacy among the students and set realistic expectations for how stakeholders will accomplish that goal together during the co-design process.

The project team should then conduct individual interviews with the participants to gather information about their experiences related to the health literacy of BCPS middle and high school students and their use of illicit drugs. The diverse perspectives and experiences of the target population and community stakeholders should be integrated into proposed solutions by the project team throughout the co-design process. The project team should consider creating personas based on the individual

interviews (see **Appendix F.3.B**). Personas can be de-identified or hypothetical representations of how the students and other stakeholders engage in the system.

The project team should also leverage the individual interviews and personas to create empathy maps for stakeholders (see **Appendix F.3.C**), which can help the project team organize and map the insights they obtain from the interviews related to what the participants are thinking, feeling, seeing, and doing that contribute to the health issue. Empathy maps can serve as valuable tools for understanding the system user's experiences (i.e., the BCPS middle and high school students) and other stakeholders in the system. The project team may seek to create user stories to identify and prioritize the needs of participants. One model that could be adopted to prioritize the identified needs is the Kano Model (see **Appendix F.3.D**), which categorizes needs into three levels of user needs: expected, normal, and exciting (American Society for Quality [ASQ], 2024). Ensuring potential solutions meet the quality characteristics of expected needs and seek to address the quality characteristics of normal and exciting will create satisfaction for the target population and other stakeholders. The purpose of conducting the individual interviews will be to gain a deeper understanding of the experiences of the co-design participants that can be communicated back to participants through methods that allow them to empathize or better understand why BCPS middle and high school students exhibit low health literacy related to illicit drugs. They will also help clarify the needs, expectations, and quality characteristics that should be addressed by potential solutions.

The final components of the initial EBCD process will be a group session and breakout sessions that highlight what participants learned from the individual interview sessions and encourage them to evaluate potential solutions. The project team should use the nominal group technique (NGT), which is a structured method for brainstorming, with the EBCD participants to gather input on what they believe is the most important information or areas of focus for the project (ASQ, 2024). NGT is particularly useful when some group members are much more vocal, there is concern that some members may not participate, and when some or all group members are new to the team. The project staff should use NGT to encourage contributions from all participants and facilitate quick agreement on the key parts or characteristics of the system that should be addressed, as well as potential barriers and solutions. After the project team gathers initial input from the group, they should lead smaller breakout group sessions

that dive deeper into the three-to-five ideas that were most supported. The EBCD process should conclude with the breakout groups sharing ideas for addressing the health issue and creating a roadmap for pursuing the ideas they believe are the most viable and have the greatest potential to increase health literacy related to illicit drugs among BCPS middle and high school students.

Design Brief

The Burke County illicit drug health literacy project will seek to increase health literacy related to illicit drugs among BCPS middle and high school students by establishing new methods for BCPS and community stakeholders to share accurate and relevant information with students through strategies that lead to healthier behaviors, reduce the burden on teachers, and engage students with local subject matter experts.

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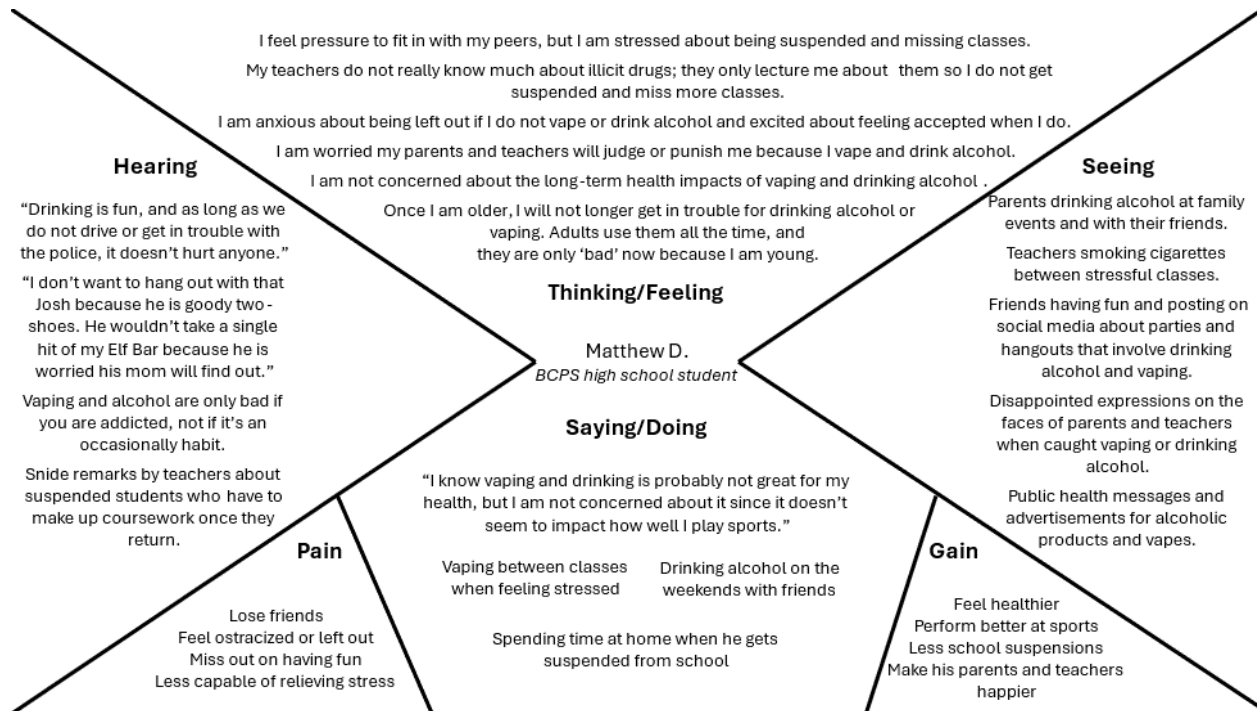
APPENDIX F.3.A: STAKEHOLDER TYPES AND RATIONALES

Stakeholder	Type/Role	Rationale
Target Population	BCPS Middle/High School Students	Students are necessary to include in the co-design process to understand their perspectives, tailor potential interventions to their needs, and empower them to become advocates for informed decision-making among their peers.
Burke County Public Schools & Parents	Principles	Involving principles is critical to ensuring the improvement process aligns with school policies, is fostered in a supportive environment, and is effectively integrated into the school's broader educational framework.
	Teachers	Teachers should be included because they are experts in pedagogy, understanding students' needs, and facilitating classroom discussions and activities.
	Parents	Parents should be involved to provide insights into potential familial dynamics, share ideas for fostering open communication related to illicit drugs at home and how to involve other parents to reinforce educational efforts beyond the school environment.
Burke County Health Department	Director	The BCHD director should be involved in the co-design process to share a comprehensive list of potential resources and support, provide expertise on public health strategies, and ensure alignment with community-wide initiatives.
	Program Manager	A BCHD program manager is a valuable person to involve in the co-design process because they will be critical in coordinating, implementing, and monitoring a proposed intervention and communicating its impact with other stakeholders.
Burke County Substance Abuse Network	Substance Abuse Sector Member	BSAN substance abuse sector members will share specialized knowledge in addiction prevention, information about local illicit drug use trends, and targeted support services for at-risk students with other co-design participants.
Burke County Sheriff's Office	School Resource Officer	The Burke County Sheriff's Office school resource officer will share their expertise in law enforcement strategies to prevent illicit drug use, access to relevant local data on drug-related incidents, and ideas for how law enforcement officers could support educational programming.

APPENDIX F.3.B: SYSTEM ACTOR PERSONAS

System Actor	Persona
Matthew D. <i>BCPS high school student</i>	Matthew is a 17-year-old BCPS high school student who currently uses illicit drugs, specifically alcohol and nicotine vapes. Matthew understands that alcohol and vaping can be dangerous, but he does not believe they will have lasting impacts on his health and are considered illicit (i.e., illegal for him to use) because of his age. He most often vapes between classes when he is stressed, and he only drinks beers with his friends off campus after school and on the weekends. Matthew does not learn much about illicit drugs during school because his teachers spend all of their time on educating students on tested subjects. He is often behind on his coursework because he is regularly suspended because he gets caught vaping on campus. When he receives information about illicit drug use from his teachers, he often does not listen to them because they are not experts on how illicit drugs impact health. He believes they are mostly fearmongering so he will vape less on campus and miss fewer classes. Matthew is concerned he will be judged by his peers if he does not vape or drink, but he wants to learn from experts on illicit drugs about how they impact health. He wants to learn about them in a way that makes him feel engaged and includes information relevant to him. He does not want to learn about illicit drugs by reading a textbook or receiving a lecture that makes him feel guilty.
Carol N. <i>BCPS middle school teacher</i>	Carol N. is a 35-year-old BCPS middle school teacher. In her role, she is responsible for educating students about illicit drugs and how they impact health. However, she only shares information related to illicit drugs that is required by the Board of Education because she is focused on ensuring her students perform well on tested subjects. She has no extra time to devote to non-tested subjects, and she does not consider herself an expert on illicit drugs, relevant risk factors or trends, or community partners and resources. She wants her students to have the information they need to make informed decisions about illicit drugs, but it is not her primary goal as an educator. Carol worries that her students do not receive enough relevant information about illicit drugs and often has students who miss class because they have been caught using illicit drugs on campus. Whenever they return to campus, her focus is on catching them up on the tested course material that they missed. She wants students to not use illicit drugs so they can remain healthy and engaged in class, rather than being suspended and then needing educational remediation. She is disappointed that many of her students already use illicit drugs, but she feels powerless when it comes to ensuring they stop using them or access local community partners and resources.

APPENDIX F.3.C: SYSTEM USER EMPATHY MAP



APPENDIX F.3.D: SYSTEM USER STORIES, KANO CLASSIFICATION, AND QUALITY CHARACTERISTICS

Stakeholder	User Story	Kano classification	Quality Characteristic
BCPS Parent	As a BCPS parent, I want my child to be taught about the dangers posed by illicit drugs, so they make healthy choices.	Expected	The percentage of students who make healthy vs. unhealthy choices related to illicit drugs
BCPS Principle	As a BCPS principle, I want to create and enforce school policies that guide students towards making healthy choices related to illicit drugs and obeying the law on campus, so they spend less time suspended and more time in class learning from our teachers.	Normal	School policies related to illicit drugs that lead to out of school suspensions or less time learning in class
BCPS high school student	As a BCPS high school student with low health literacy, I want to learn about illicit drugs and health literacy from experts in the field, so I feel engaged in the content and hear from the people who know the most about these topics.	Exciting	Number of subject matter experts involved in BCPS health literacy education/programming

IMPROVING THE SOCIAL AND COMMUNITY CONTEXT OF
PUBLIC MIDDLE AND HIGH SCHOOL STUDENTS IN BURKE
COUNTY, NORTH CAROLINA THROUGH INCREASING
HEALTH LITERACY RELATED TO ILLICIT DRUG USE

The County Catalysts

Molen Alfaro Barrameda, Jeff Cineas, Mandolin McConaha, Ahmad Fahim Pirzada, and Mason Zeagler



Slide 1, Mason Zeagler

Hello, everyone! Thank you for attending our presentation. It is titled, "IMPROVING THE SOCIAL AND COMMUNITY CONTEXT OF PUBLIC MIDDLE AND HIGH SCHOOL STUDENTS IN BURKE COUNTY, NORTH CAROLINA THROUGH INCREASING HEALTH LITERACY RELATED TO ILLICIT DRUG USE."

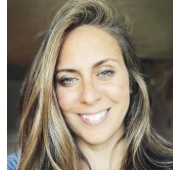
Introduction



Mason Zeagler



Jeff Cineas



Mandolin McConaha



Ahmad Fahim
Pirzada



Molen Alfaro
Barrameda

The County Catalysts



Slide 2, *Mason Zeagler*

This is our team! As the County Catalysts, we've collaborated over the course of this semester, and each of us brought different backgrounds and perspectives to this project.

Presentation Agenda

Methods

Overview of SDOH

Insights & Recommendations (Conc. Deliverables 1 and 2)

Conclusion

Q&A



Slide 3, *Mason Zeagler*

Here is a summary of our presentation.

I will explain the methods we used to analyze the social determinant of health and develop recommendations.

Next, Jeff will provide an overview of the social determinant of health in Burke County.

Then, Mandolyn, Fahim, and Molen will summarize the insights and recommendations we synthesized to increase health literacy related to illicit drugs among these students.

At the end of their remarks, we will conclude the presentation and moderate a brief question and answer session.

Methods

Domains of Social Determinants of Health



UNC GILLINGS SCHOOL OF GLOBAL PUBLIC HEALTH

(Centers for Disease Control and Prevention, 2023)

Slide 4, Mason Zeagler

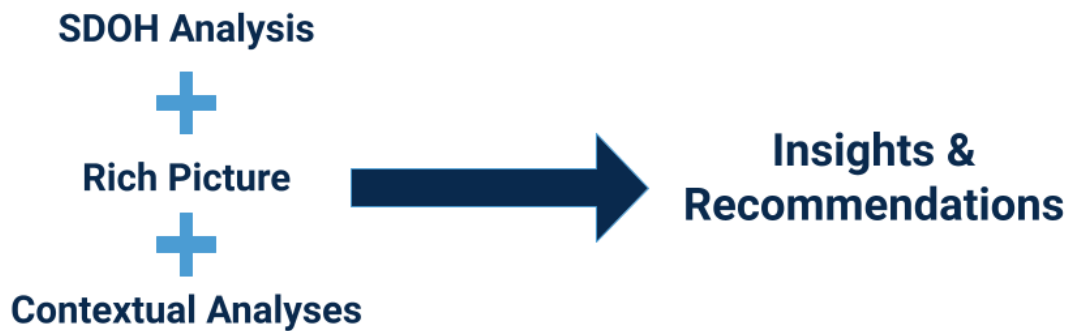
It was requested our team focus on ‘upstream’ efforts to address social determinants of health within the domain of social and community context (the one in yellow) to realize long-term, downstream improvements in community health.

This domain specifically focuses on how people’s relationships and interactions with the family, friends, co-workers, and community members impact their health and well-being.

It was also requested that we select a specific social determinant of health as defined by Healthy People 2030, which sets data-driven national objectives to improve health and well-being over the next decade.

Based on the available county-level data and goals listed within this domain, we focused on increasing the health literacy of the population, specifically health literacy related to illicit drugs among Burke County Public middle and high school students.

Methods



Slide 5, Mason Zeagler

We began by analyzing the social determinant of health.

We then created a rich picture and conducted a series of contextual analyses to understand why BCPS middle and high school students demonstrate low health literacy related to illicit drugs.

We used the insights produced from these tools and analyses to tailor our recommendations to meet the needs of this population and health issue in Burke County.

I will now turn it over to Jeff, who will share more information about why improving this health issue is so important for Burke County.

Conclusion



Project STAR



Engagement & Accountability Plan



Leadership Framework

MASON

Ultimately, our recommendation is the Burke County Board of Commissioners should adopt policies and allocate funds to address low health literacy related to illicit drugs among BCPS middle and high school students.

Based on a series of analyses, we recommend the commissioners implement Project STAR and use an engagement and accountability plan and the LEADS leadership framework to guide its implementation.

Using these tools will result in students having improved connections with community partners and resources, understanding of illicit drugs and the risks they pose, and health outcomes.

With the time we have remaining, we will answer your questions.