BARRIERS AND FACILITATORS TO ALCOHOL REDUCTION IN AN INTEGRATED CARE INTERVENTION AMONG INDIVIDUALS WITH CHRONIC HEPATITIS C VIRUS

by

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ABSTRACT

HALEY COOPER. Barriers and Facilitators to Alcohol Reduction in an Integrated Care Intervention Among Individuals with Chronic Hepatitis C Virus.
(Under the direction of DR. ANDREW CASE)

Approximately 2.71 million people in the United States are living with chronic hepatitis C virus (HCV), which causes liver inflammation and can lead to liver damage, loss of liver function, liver cancer, and death (Centers for Disease Control and Prevention, 2019; Chhatwal et al., 2019; de Oliveria Andrade et al., 2009; Dowsett et al., 2017; Khatun & Ray, 2019). Alcohol works synergistically with HCV and can continue to compromise the liver after HCV has been cured (Khan & Yatsuhashi, 2000; Llamosas-Falcón et al., 2020; Noda et al., 1996; Peters & Terrault, 2002; Younossi et al., 2013). Healthcare models that integrate physical and behavioral healthcare can improve health outcomes, including in the context of HCV and alcohol use (Farmanova et al., 2019; Kwan & Nease, 2013; Patel et al., 2018). However, the benefits of integrated care have not been found consistently (Abrams, 2015; Farmanova et al., 2019; Nolte, 2021; Vold et al., 2019). In addition, factors that explain integrated care models' effects are not well understood, in part due to the lack of research on patients' perspectives in integrated care settings. The current study begins to address this knowledge gap by analyzing interviews collected from 34 participants who participated in a randomized controlled trial of an integrated Hepatitis C-Alcohol Reduction Treatment (HepART) intervention, which led to significant reductions in alcohol use but did not lead to improvements compared to a less-resource intensive fragmented care condition (Proeschold-Bell et al., 2019). Thematic analysis of interview data examined barriers and facilitators to alcohol reduction in fragmented and integrated care settings. Results revealed that key facilitators of alcohol reduction, including enhancing personal readiness to change and compassionate communication during a screening and brief intervention delivered by liver doctors, were present in both conditions. Participants further described social and environmental forces that had the potential to enhance or interfere with alcohol reduction, while physical and behavioral health education was seen as empowering in the alcohol reduction process. Ultimately, factors common across conditions seem to point to key conditions important for alcohol reduction regardless of whether patients are engaged in integrated care versus fragmented care. Findings also have implications for improving efforts to evaluate the effectiveness of integrated care interventions.

Keywords: hepatitis C, liver disease, alcohol use, integrated healthcare

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INTRODUCTION

Chronic hepatitis C virus (HCV) is the most common bloodborne infection and a leading cause of liver transplantation in the United States, accounting for 23.6% of transplants (Parrish et al., 2019). Although HCV is now curable, social and structural barriers limit access to HCV treatment (Cousien et al., 2016; Goodyear et al., 2020; Gutkind et al., 2022; Rosenthal & Graham, 2016). In addition, liver damage caused by the virus can persist beyond treatment (Polyak et al., 2021). Management of liver health in the context of chronic HCV infection therefore represents a long-term health concern that requires innovative treatment strategies.

Preventing additional liver damage is essential to preserving the health of individuals with a history of HCV infection. Reduction of alcohol intake in this population is a critical strategy to achieve this objective because alcohol consumption in the context of chronic HCV can accelerate liver disease progression (Khan & Yatsuhashi, 2000; Llamosas-Falcón et al., 2020; Noda et al., 1996; Peters & Terrault, 2002; Younossi et al., 2013). Compounding the clinical picture for persons with HCV who have liver disease is the reality that they are more likely to drink than people without HCV (Armstrong et al., 2006; Taylor et al., 2016). Therefore, ensuring access to alcohol treatment in this population is paramount. However, the typical treatment approach in the U.S. healthcare system is that physical and behavioral health concerns are addressed in siloed care settings, which can be challenging for patients with HCV to simultaneously navigate (Brener & Treloar, 2009; Dowsett et al., 2017).

Integrated models of care delivery, which involve highly collaborative care and foster communication between health professionals, may offer remediation for fragmentation in healthcare (American Psychological Association [APA], 2013). Integrated healthcare systems share physical spaces, medical records, and/or accountability for care quality with the goal of improving patients' experiences and health outcomes across mental, behavioral, and physical dimensions (McCarthy, 2015). However, studies of patient experiences in integrated care are sparse, limiting our understanding of the advantages and disadvantages of this model of care. Further, because many integrated care systems are relatively new and are often highly context-specific, evaluating the overall effectiveness of this model has presented methodological challenges (Nolte, 2021). It therefore remains unclear to what degree integrated models of care lead to their intended effects of holistic improvements in patient experience and health outcomes and the factors that account for this. Exploring patients' perspectives on integrated care will not only address evidence gaps in patient experience, but may also identify potential indicators of integrated care effectiveness that could be used in future efforts to evaluate and improve integrated care interventions.

While it is widely assumed that integrated care leads to improved patient experiences and outcomes compared to fragmented forms of healthcare delivery, recent findings have brought this assumption into question. Proeschold-Bell and colleagues (2018) tested the effects of a co-located, integrated Hepatitis C-Alcohol Reduction Treatment (Hep ART) intervention in comparison to an enhanced treatment as usual (TAU) condition, which involved screening for alcohol use and tailored referrals to off-site behavioral treatment (i.e., fragmented care). Results demonstrated that integrated treatment led to self-reported reductions in heavy drinking days, lower average grams of alcohol consumed per week, and increases in alcohol abstinence over time. However, these improvements in alcohol consumption did not differ significantly from those found in the enhanced referral condition; in fact, the enhanced referral condition slightly outperformed the intervention in reduction of heavy drinking days (Proeschold-Bell et al., 2018). Similar alcohol reduction outcomes between an integrated care modality and a less resource-intensive referral process suggest that it is important to better understand the conditions under which integrated care compared to fragmented modalities might be advantageous versus disadvantageous in achieving optimal alcohol consumption outcomes. One approach to doing this is investigating patients’ perspectives of facilitators and barriers to optimal alcohol consumption outcomes across integrated and more fragmented models of care.

This study analyzed interview data collected from participants in the randomized controlled trial of Hep ART to explore perceived barriers and facilitators to alcohol reduction in both fragmented and integrated care settings. This examination of factors shared and unique to each model of care delivery adds a fuller understanding of the ways different models of care can holistically address patients’ needs and the challenges each model presents. Such insights may be particularly useful in resource-constrained or capacity-limited community settings where integrated care might not be feasible (Kozlowska et al., 2018). In addition, insights gleaned from this research have important implications, more broadly, for care provision to people with HCV, as well as for healthcare policymakers and professionals who serve a population with complex, long-term health needs (Raghupathi & Raghupathi, 2018).

LITERATURE REVIEW

Hepatitis C Virus

Background

Hepatitis C, an inflammation of the liver caused by the hepatitis C virus (HCV), is the most commonly reported bloodborne infection in the United States and a major threat to public health (Denault & Gardner, 2021). An estimated 58 million people are living with HCV worldwide, with 1.5 million new infections occurring globally and approximately 44,700 new infections in the U.S. each year (Centers for Disease Control and Prevention [CDC], 2019; World Health Organization [WHO], 2021). While HCV prevalence and mortality rates in the U.S. are declining, an estimated 2.71 million people are living with chronic HCV and more than 17,000 deaths were caused by HCV each year from 2013-2016 (CDC, 2019; Chhatwal et al., 2019).

For 15-45% of people with HCV, infection is asymptomatic and acute, resolving spontaneously without treatment within six months of infection. The remaining 55-85% of people will develop chronic HCV (WHO, 2021). Chronic HCV can cause health problems ranging in severity, including chronic fatigue, pain, nausea, depression, irritability, difficulty concentrating, fibrosis (formation of scar tissue on the liver), cirrhosis (late stage, irreversible scarring of the liver), liver failure (loss of liver function), and hepatocellular carcinoma (liver cancer; CDC, 2020; de Oliveria Andrade et al., 2009; Dowsett et al., 2017; Khatun & Ray, 2019). The liver damage caused by chronic HCV can create a host of dangerous complications, such as malnutrition, bleeding and blood disorders, ascites (buildup of excessive fluid in the abdomen), hepatic encephalopathy (buildup of excessive toxins in the brain), increased risk of infections, malnutrition, and kidney failure (Heidelbaugh & Sherbondy, 2006; Mayo Clinic Staff, 2021). HCV is also one of the leading causes of liver transplantation in the U.S. (Parrish et al., 2019).

Chronic HCV and the complications it causes place multidimensional burdens on individuals, families, and healthcare systems in the U.S. Individuals with HCV experience substantial disruption to daily life, such as the ability to maintain employment, due to physical and psychological symptoms (Dowsett et al., 2017). Because drug injection is the primary mode of HCV transmission (CDC, 2020), individuals and institutions often associate HCV with drug use or risky behavior and stigmatize people with HCV. HCV stigma can impact self-concept, social relationships, and access to quality healthcare for people with HCV (Dowsett et al., 2017; Harris et al., 2021). In addition, an HCV diagnosis can elicit a range of negative emotions in patients and their children, who may become frustrated or confused by their parent’s symptoms (Dowsett et al., 2017). HCV also affects relationships with family members and caregivers, especially due to the financial costs of medical care, which can impact all aspects of daily living and medical adherence (Bajaj et al., 2011; Dowsett et al., 2017). Chronic HCV is also costly for healthcare systems. The average annual healthcare cost per adult with chronic HCV is over $17,000 more than adults without HCV. This difference in annual costs, primarily due to inpatient hospitalizations, remains when comparing adults with and without HCV who have disabilities (Roebuck & Liberman, 2019). Alleviating the substantial personal and societal burdens of chronic HCV is therefore an urgent concern.

Alcohol Consumption and HCV

Alcohol consumption is an important contributor to liver disease, even in the absence of HCV infection. The deleterious effects of alcohol on liver health, including onset of and mortality from liver cirrhosis and hepatocellular carcinoma, are well documented (Askgaard et al., 2015; Corrao et al., 2004; Simpson et al., 2019; Tapper & Parikh, 2018). Deaths due to cirrhosis increased by 65% from 1999-2016 in the U.S., and alcohol-related liver disease has fueled this increase in mortality (Tapper & Parikh, 2018). Evidence from prospective studies suggests that both amount and frequency of alcohol intake are associated with risk of cirrhosis in adult men and women. Moreover, even moderate levels of alcohol consumption elevate cirrhosis risk (Askgaard et al., 2015; Simpson et al., 2019).

While alcohol consumption in the absence of HCV presents significant health challenges, its presence in patients with HCV makes it particularly deleterious to health. In fact, persons with a history of alcohol use disorder are half as likely to clear an acute HCV infection compared to persons without a history of alcohol use disorder (Piasecki et al., 2004), contributing to the higher prevalence of chronic HCV in this population. Alcohol consumption remains a key determinant of liver disease progression in the context of chronic HCV infection. Present data consistently reveal adverse effects from frequent and high amounts of alcohol intake on chronic HCV. For example, heavy alcohol use has been shown to multiply the likelihood of liver cirrhosis incidence and hospitalization for patients with HCV (Corrao & Aricò, 1998). Research by Llamosas-Falcón and colleagues (2020) demonstrates that an alcohol use disorder diagnosis poses a 3.3-fold risk for progression of HCV to decompensated liver cirrhosis, which is the deterioration of liver function in a patient with cirrhosis. Additionally, excessive alcohol intake has been associated with accelerated fibrosis, increased risk of hepatocellular carcinoma, greater likelihood of liver failure requiring transplantation, and mortality (Khan & Yatsuhashi, 2000; Noda et al., 1996; Peters & Terrault, 2002; Schwarzinger et al., 2017; Younossi et al., 2013).

Less studied are the effects of light to moderate alcohol consumption. However, evidence suggests that alcohol consumption continues to pose a threat to the health of people with chronic

HCV even at lower levels. For example, moderate alcohol intake is significantly associated with fibrosis progression for this population (HÉzode et al., 2003). According to Llamosas-Falcón and colleagues (2021), there is a dose-dependent relationship between alcohol use in HCV-related cirrhosis, such that each alcoholic drink per day increases cirrhosis risk by about 11%. Among patients with HCV-related cirrhosis, as few as 1-2 drinks per day can increase risk of hepatocellular carcinoma (Vandenbulcke et al., 2016). Younossi and colleagues (2013) found that consumption of 1-2 drinks per day was associated with 2.4 times the risk of mortality for patients with chronic HCV compared to those without HCV. Moderate drinking is therefore associated with multiple indicators of poor liver health among people with HCV.

Current evidence consistently reveals worsened outcomes for individuals with chronic HCV and concurrent alcohol use (Hutchinson et al., 2005). These adverse effects likely occur because alcohol consumption and HCV work synergistically to compromise the liver (Hosseini et al., 2019). Given that people with HCV are 1.3 times more likely to drink excessively and nearly eight times more likely to consume over three alcoholic drinks a day than people without HCV (Armstrong et al., 2006; Taylor et al., 2016), alcohol reduction in this population is imperative.

Social determinants of health (SDOH) can contribute to risk of both HCV acquisition and alcohol use. SDOH refer to the social factors influencing health (spanning economic, educational, environmental, healthcare, and social domains) and the social stratification mechanisms that unequally distribute these factors (Solar & Irwin, 2010). Adverse SDOH–including having low income, no or inadequate health insurance coverage, current or history of incarceration, and homelessness–are associated with increased likelihood of HCV transmission (Ludden et al., 2020). SDOH can also impact substance and alcohol use behaviors, the health consequences of use, and access to resources to address these consequences (Collins, 2016; Popovici & French, 2013; Sanner & Greene, 2020; Williams et al., 2019). The unequal distribution of SDOH in the U.S. plays a role in exposing vulnerable populations to conditions that accelerate risk of HCV, alcohol consumption, and the subsequent effects of both on quality of life and premature mortality (Ludden et al., 2020).

Treatment for HCV and Alcohol Use

Chronic HCV is treatable. The goal of treatment is to develop a sustained virologic response, which is considered to be a functional cure (Rosenthal & Graham, 2016). The advent of direct-acting antiviral drugs (DAAs) for HCV in 2013 constituted a revolutionary advancement in the treatment of HCV. Evidence suggests that DAAs produce high sustained virologic response and offer low risk of adverse effects to patients (Beste, 2019; Rosenthal & Graham, 2016). Reported benefits of DAAs include lower mortality, reduced liver cancer risk, and improved health-related quality of life (Beste, 2019). DAA treatment is therefore an important step toward objectives set by Healthy People 2030 to reduce HCV deaths by 65%, and increase the proportion of people who have cleared HCV infection by 37.5% (Beste, 2019; Office of Disease Prevention and Health Promotion [ODPHP], n.d.).

Despite the demonstrated safety and effectiveness of DAAs, structural barriers along the HCV care continuum limit the potential for treatment alone to eliminate HCV or its complications (Cousien et al., 2016). Access to DAA treatment is limited by adverse SDOH, including housing insecurity and inadequate transportation (Goodyear et al., 2020; Gutkind et al., 2022; Palacios et al., 2020; Rosenthal & Graham, 2016). Prohibitive pricing of DAAs has led many insurance companies to impose coverage restrictions on sobriety and fibrosis severity. Patients with active substance use and mild to moderate liver fibrosis have largely been excluded from HCV treatment as a result (Goodyear et al., 2020; Gutkind et al., 2022; Rosenthal & Graham, 2016).

Navigating the HCV cascade of care to obtain DAA treatment can also be complex. Referrals to subspecialists for HCV treatment or consultation are required by some health payers and plans, and individuals can lose access to treatment during this transition in care (Millman et al., 2017). Individuals can also be lost during the time lapse between the decision to receive treatment and treatment initiation, which can take months or even years (Millman et al., 2017). Adverse SDOH can also limit linkage to HCV care. Palacios and colleagues (2020) found that among patients with HCV who missed infectious disease clinic appointments, not only were adverse SDOH (e.g., inadequate transportation, housing insecurity) common, but not having insurance accepted at the clinic was associated with greater risk of mortality. Thus, several obstacles to accessing HCV treatment and HCV elimination in the U.S. exist. In fact, current data indicate that only 37% of individuals living with HCV in the U.S. have been cured, and nearly half are estimated to be unaware of their HCV diagnosis (Chhatwal et al., 2019).

Additional challenges exist for people with HCV who drink alcohol. While DAAs remain safe and effective in the context of alcohol use (Christensen et al., 2019; Lorenzini & Girardin, 2020), alcohol consumption continues to threaten liver health even after HCV has been cured. Alcohol use may exacerbate liver damage caused during active HCV infection, especially among patients with cirrhosis or fibrosis, and continue to accelerate risk of liver cancer and mortality (Kim et al., 2020; Younossi et al., 2013). Guidelines for managing and treating HCV therefore recommend abstinence from alcohol both during and after active infection (American Association for the Study of Liver Diseases, 2020; European Association for the Study of the Liver, 2018). Alcohol treatment is therefore a critical service for people with HCV. However, alcohol use is under-treated in the U.S. (U.S. Department of Health and Human Services, 2014) and shortages in alcohol treatment for individuals with HCV may exist (Palepu et al., 2006). Further, patients with HCV have reported less favorable treatment by staff in alcohol and other drug services than patients who are HCV-negative (Brener & Treloar, 2009), suggesting that discrimination may interfere with treatment for alcohol use. Stigma associated with both alcohol and drug use may also impact access to treatment among people with HCV (Goodyear et al., 2020; Keyes et al., 2010).

In sum, there is a safe and effective cure available to treat HCV, yet a significant portion of individuals with ongoing HVC infection have not been successfully treated. Alcohol reduction remains a priority for them, even after treatment. Several structural and contextual barriers, including those within healthcare systems, limit access to treatment for HCV and alcohol use. Improvements to systems of care for HCV and alcohol use therefore have potential to improve health outcomes for people with HCV who drink alcohol.

Healthcare Delivery

Fragmentation in Healthcare

The U.S. healthcare system is financed through a variety of mechanisms. Donnelly and colleagues (2019, p. 1482) describe the structure of the healthcare system in this way:

> Health care in the United States is currently a unique hybrid, multiple-payer system, but with elements of single payer (i.e., Medicare, although beneficiaries also contribute through premiums), publicly subsidized private payers (e.g., employer-sponsored health insurance), socialized medicine (e.g., Department of Veterans Affairs, in which government is both the payer and the employer), and self-pay (i.e., out of pocket).

The patchwork of publicly and privately funded health systems has contributed to the fragmentation of healthcare delivery. Care is commonly delivered by multiple entities, each with their own unique priorities and capacities (Cebul et al., 2008). The result is care provision across multiple providers and organizations, with no single entity coordinating various aspects of care (Frandsen et al., 2015). For example, healthcare organizations providing primary physical healthcare–most patients' point of entry into the healthcare system–may not provide adequate specialty, mental, or behavioral healthcare, if any (Compton-Phillips & Mohta, 2018, as cited in Heath, 2018). Patients therefore assume the responsibility for understanding and choosing healthcare coverage, discerning between types of healthcare services and major treatments, finding the appropriate places to address their health concerns and coordinating various areas of care across providers and settings (Griese et al., 2020; Sofaer, 2009).

For individuals with complex, chronic, and multiple conditions or conditions requiring care from multiple providers at the same time (e.g., chronic HCV and alcohol use), healthcare system navigation becomes increasingly difficult, stressful and potentially damaging to health. Colorafi and colleagues (2021) found that for people with disabilities, interacting with the system induces a multitude of stressors, which may worsen health outcomes over time. Recent evidence suggests that for patients with chronic illnesses, higher levels of care fragmentation are associated with more frequent lapses in care quality (Frandsen et al., 2015), greater risk of hospital admissions and emergency department visits (Kern et al., 2018), longer length of stay for inpatient readmissions, and even higher likelihood of in-hospital death (Cohen-Mekelburg et al., 2019). Patients with chronic conditions also incur greater financial expenses when care is highly fragmented (Frandsen et al., 2015).

In addition to personal and financial costs, fragmentation in care may interfere with efforts to obtain equitable health outcomes. The multiple, distinct entities delivering healthcare have distinct benchmarks and measures of health equity (Sivashanker et al., 2020). Lack of standards may interfere with healthcare organizations' abilities to address inequities in a proactive and systematic manner; they may also prevent the development of incentivization programs and inter-institutional comparison of outcomes to encourage accountability (Sivashanker et al., 2020). Further, multiple transitions between healthcare systems and settings may expose patients from marginalized backgrounds to additional inequities, as evidenced by disparities in admissions to cardiology services for Black and Latinx hospital patients with heart failure (Eberly et al., 2019).

The effects of care fragmentation on health outcomes and health equity raise concerns within the context of chronic HCV. The HCV cascade of care consists of successive stages including diagnosis, linkage to HCV care, treatment and cure (Maier et al., 2016). Navigating this cascade requires substantial systems-level knowledge, and both patients and providers express frustration with the lack of continuity of care and the perceived silos in which specialists work (Doswett et al., 2017; Goodyear et al., 2020). The cascade of HCV care can be disrupted by frequent transitions between different areas of care (e.g., referrals and hospitalizations) and long waits for appointments (Dowsett et al., 2017; Goodyear et al., 2020; Gutkind et al., 2022).

Current treatment guidelines recommend that healthcare providers screen for substance abuse, encourage patients with HCV to reduce alcohol use, and offer substance abuse and mental health treatment as appropriate (American Society of Addiction Medicine [ASAM], 2022; CCDC, 2020; Substance Abuse and Mental Health Services Administration [SAMHSA], 2011). However, because of the lack of adequate behavioral healthcare offerings in many healthcare organizations (Heath, 2018), treatment is almost always offered in the form of external referrals. One such external referral strategy is the Screening, Brief Intervention, and Referral to Treatment (SBIRT). SBIRT is a public health approach to early intervention and treatment for patients with or at risk of substance use disorders. It has been implemented widely as an alcohol reduction intervention in a variety of healthcare settings, and substantial research has demonstrated its effectiveness (Agerwala & McCance-Katz, 2012; SAMHSA, 2011).

Further, people with HCV who use alcohol or other drugs often experience stigma both due to their HCV status and due to their substance use. Stigma may act as a barrier to treatment in traditional healthcare settings, including substance use treatment facilities (ASAM, 2022; Brener & Treolar, 2009). Thus, people with chronic HCV who drink alcohol face several chances to fall through gaps in HCV systems of care. Given that persistent racial and socioeconomic disparities in HCV prevalence, outcomes, and HCV care access and care quality exist (El-Serag et al., 2010), fragmentation in HCV healthcare may also exacerbate inequities. Efforts to improve health outcomes for people with chronic HCV through alcohol reduction and to promote health equity among this population therefore necessitate a coordinated system of physical and behavioral healthcare (Vold et al., 2019).

Defining Integrated Healthcare Delivery

Integrated models of healthcare offer an alternative to the fragmented systems that predominate healthcare delivery in the U.S. According to the Institute of Medicine (as cited in McCarthy, 2015, p. 4), integrated healthcare delivery means that “care providers have established relationships and mechanisms for communicating and working together to coordinate patient care across health conditions, services, and care settings over time.” Integrated care delivery aims to bridge gaps in systems of care, promote cost-efficiency, enhance patient and provider satisfaction, and improve population health outcomes (Kwan & Nease, 2013; Youssef et al., 2020). Ideally, integrated healthcare delivery facilitates convenient care access through features such as co-located multispecialty services; encourages continuity of patient's information and care across transitions (i.e., through shared electronic health record systems); and involves teamwork and shared accountability for quality care (McCarthy, 2015).

Integrated healthcare settings vary in their level of collaboration. Heath and colleagues (2013) present a continuum of integration in behavioral healthcare. According to this framework, in less integrated *coordinated* systems, the key element of integration is communication between separate systems that function separately and exist in separate facilities. Providers may communicate periodically about shared patients or as specific patient issues arise. Patients receiving care in this model may experience services in this level of collaboration as separate and siloed, and they face potential barriers to accessing care (i.e., following up on referrals). Moderately integrated *co-located* systems share a physical space. Providers communicate regularly about shared patients, potentially collaborating on treatment plans for specific patients. Patients are still treated separately at the same facility, but the physical proximity of treatment and warm hand-offs between providers may reduce barriers to accessing care. At the highest level of collaboration, *integrated* systems share the same facility and practice space, care teams, screening practices, treatment plans, and even funding sources. Patients experience this level of integration as a "one-stop shop" where all patient needs are addressed by a coordinated healthcare team (Heath et al., 2013; Vogel et al., 2017).

The Past and Present of Integrated Healthcare

Models of integrated care delivery in the U.S. emerged in the early 20th century, as providers organized themselves into multispecialty group practices with shared governance and collaborative practices (Dawda, 2019; McCarthy, 2015). Multispecialty groups pursued innovative payment structures in the 1970s that involved fixed payments for sets of services, rather than standard fee-for-service models. Some consumers opposed this payment innovation due to restraints on choice and support for these early models of integration diminished in the 1990s. Integrated care systems have since remained the exception while single-specialty organizations remain the norm (McCarthy, 2015).

Recent healthcare policy reform has set the stage for renewed development of integrated care (Vogel et al., 2017). The Patient Protection and Affordable Care Act of 2010 (ACA) includes provisions to address the limitations of standard care delivery and financing. These provisions focus on piloting new care delivery models, encouraging reimbursement systems that incentivize service quality in lieu of service quantity, and developing resources to enact system-wide improvements (Abrams et al., 2015; McCarthy, 2015).

Considerable efforts to seamlessly integrate primary, behavioral, and long-term healthcare services through cross-sector collaboration have followed the enactment of ACA. Many initiatives are still in their nascent stages and consequently, so is documentation of their effects. Early evidence demonstrates the potential for integrated health systems to generate cost-savings, contain costs, and reduce the cost of care (Abrams et al., 2015; Farmanova et al., 2019; Hwang et al., 2013). Integrated care delivery has been associated with improvements in care quality and patient access, including improved access to same-day appointments and reductions in hospital and emergency department utilization, frequency and lengths of stay, wait time for referrals, and medication errors (Baxter et al., 2018; Hwang et al., 2013; Liljas et al., 2019; Nolte, 2021; Stephenson et al., 2019). Research has also demonstrated promising impact on health outcomes with the provision of integrated care such as increased uptake of preventive health behaviors and lifestyle changes, improved quality of life, and even reductions in morbidity and mortality (Farmanova et al., 2019; Kwan & Nease, 2013). For individuals living with chronic HCV, integrated HCV care and mental health/substance abuse treatment has led to increased eligibility for treatment; increased treatment initiation, adherence, and completion; higher rates of sustained virologic response; and reductions in alcohol use (Patel et al., 2018). Integrated care delivery has potential to disrupt the cascade of complications caused by HCV and alcohol consumption.

Despite empirical support for the effectiveness of integrated care interventions, this body of evidence is equivocal. Many of the improvements described in current research represent trends, not statistical significance, or they only report weak effect sizes (Hwang et al., 2013; Kwan & Nease, 2013; Nolte, 2021). Other studies fail to demonstrate evidence of any of the aforementioned improvements in indicators of economic impact, care quality, and health outcomes, including within the context of HCV (Abrams, 2015; Farmanova et al., 2019; Nolte, 2021; Vold et al., 2019). Mixed findings may be in part due to the methodological challenges involved with evaluating highly complex, context-specific integrated care systems. Lack of precision in definitions of integrated care has also complicated attempts to systematically evaluate its impact (Nolte, 2021; Singer et al., 2018). Additionally, differences in healthcare outcomes may take substantial time to generate (Abrams et al., 2015; Nolte, 2021).

The difficulty interpreting and comparing results from evaluations of emergent, context-dependent interventions suggests that different approaches to evaluating their effects may be beneficial. Moreover, identifying key components that are effective across integrated care settings has been described as a research priority (Kwan & Nease, 2013; Nolte, 2021; Vogel et al., 2017). Past attempts to determine these “active ingredients” have been unable to explain the positive effects of integrated care interventions by quantifying the level of collaboration or presence of features of integration, suggesting that additional unmeasured factors may be influencing results (Kwan & Nease, 2013). Further, apart from patient satisfaction–which is consistently improved by integrated care interventions (Dunn et al., 2021)–the role of the patient in integrated care is not well-understood, and substantial gaps in knowledge of the patient experience exist. Qualitative research approaches use methods of analysis that assess individual experiences and complex phenomena in detailed, contextualized ways (Ravitch & Carl, 2016). Qualitative approaches are therefore well-suited for the exploration of some previously unexamined features of the intervention or study context that may affect healthcare outcomes and for expanding current knowledge of patient experiences.

The Present Study

Despite the availability of a functional cure, the majority of individuals with a history of HCV infection in the U.S. have not received curative treatment (Chhatwal et al., 2019). HCV therefore remains a public health priority. Insurance coverage restrictions related to substance abuse and alcohol abstinence constrain access to DAA treatment, while siloes in the healthcare system pose barriers to alcohol reduction. Because of these extant insurance coverage restrictions, the considerable effects of alcohol on the course of HCV illness, and the impact of alcohol use on liver health after successful HCV treatment, alcohol reduction in individuals with HCV is a critical health objective. Bridging gaps in systems of care to improve access to alcohol treatment represents a viable strategy to achieve this aim.

Integrated care delivery models are well-positioned to address the complex health problems and persistent health disparities within the context of chronic HCV and alcohol use. Yet, some research suggests that such models may not be more advantageous than fragmented models of care. These findings indicate a more nuanced approach might be needed to parse factors that enable or impede the effectiveness of integrated care. Similarly, it is important to understand the conditions under which more fragmented models of care might be equally effective as integrated models. The current study employed a qualitative approach that centers and illuminates the experiences of patients across these two models of care to identify perceived barriers and facilitators to alcohol reduction associated with each model.

The purpose of this study is to gain a better understanding of the precise conditions under which integrated versus fragmented care is advantageous in alcohol reduction among patients with HCV. To this end, I investigated patients' perceptions of barriers and facilitators of alcohol reduction in an integrated care intervention versus an enhanced treatment referral intervention. The specific research questions this study addressed are:

1. What factors do patients perceive as facilitating their alcohol reduction in an integrated care intervention?
2. What factors do patients perceive as barriers to their alcohol reduction in an integrated care intervention?
3. What factors do patients perceive as facilitating their alcohol reduction in an enhanced treatment referral process?
4. What factors do patients perceive as barriers to their alcohol reduction in an enhanced treatment referral process?

METHOD

Context of the Study

This study used interview data collected during a National Institutes of Health-funded multi-center randomized controlled trial of an integrated care intervention called Hepatitis C-Alcohol Reduction Treatment (HepART; R01AA021133-01A1). The study protocols were approved by Institutional Review Boards at Duke University and University of North Carolina at Charlotte. This intervention for patients with current or previous chronic HCV took place from October 2014 to September 2017. The procedures of this trial are reported in full elsewhere (Proeschold-Bell et al., 2018, 2019) but are summarized here. Hep ART was selected for its focus on assessing the benefits of integrated care. A total of 181 participants were randomly assigned to either the enhanced treatment as usual (TAU) or the enhanced TAU + Hep ART intervention condition. The randomized controlled trial evaluated the effects of the integrated care intervention compared to enhanced TAU on the following primary outcomes: alcohol abstinence, defined as the proportion of participants with no alcohol consumption in the past 30 days at six months after baseline, and alcohol return to use, defined as the number of heavy drinking days between six and 12 months after enrollment.

Enhanced Treatment as Usual Condition

Treatment as usual in the liver clinics was enhanced by training from the Hep ART research team to implement provider-delivered alcohol screening and tailored referrals out to alcohol treatment. All participants in the study received enhanced TAU, which involved providers conducting Screening, Brief Intervention and Referral to Treatment (SBIRT). The first component, screening for use and severity of alcohol, entails administration of the Alcohol Use Disorders Identification Test (AUDIT). For women with AUDIT scores above 3 and men with scores above 7, providers conducted a brief awareness-raising intervention. The brief intervention component of SBIRT uses Motivational Interviewing principles to guide a 5-10-minute conversation with patients about the effects of their alcohol use on current and future health outcomes, the patients' responsibility to change drinking behavior, and advice and information on how to reduce drinking. After the brief intervention, patients in the enhanced TAU condition were referred to off-site alcohol treatment options in their community (e.g., Alcoholics Anonymous or Narcotics Anonymous, university-affiliated outpatient programs) based on their unique geographic location, transportation needs, and health insurance status. This condition therefore received enhanced TAU and an enhanced referral. Enhanced TAU was used as the comparison group for two reasons: (1) because researchers anticipated that it would become the standard of care in liver clinics and (2) to determine whether Hep ART is superior given that enhanced TAU is less resource-intensive. After patients in the Hep ART condition received the brief intervention component of SBIRT, they were contacted by Hep ART addiction therapists.

Hep ART Intervention Condition

The purpose of the Hep ART intervention is to prevent the progression of liver disease by reducing alcohol consumption among individuals living with active or prior HCV infection. Hep ART uses the Health Beliefs Model as its conceptual framework, which asserts that treatment adherence depends on perceived susceptibility to and severity of illness, perceived barriers and benefits to treatment, and cues to action (Becker, 1974 as cited in Proeschold-Bell et al., 2018). Hep ART enrolls patients who, because they drink alcohol and had or have HCV, may perceive themselves as susceptible to liver disease. The Hep ART intervention arm aims to reduce barriers to alcohol treatment, including navigation of complex, fragmented systems of care.

The six-month Hep ART intervention integrated HCV-alcohol treatment into treatment in liver clinics. Alcohol treatment, located in or directly across the street from liver clinics from which patients were recruited, was designed to take place in a safe, familiar, and convenient location that fosters trust and destigmatizes alcohol care. The co-location of addiction therapists and medical providers in the liver clinics allowed providers to communicate regularly, both verbally and through shared electronic medical records, and develop joint treatment plans. For example, addiction therapists could notify medical providers about a patient’s engagement in alcohol therapy so medical providers could encourage the patient to improve or continue their attendance. HCV and alcohol care was further integrated through a treatment manual that includes up to 12 individual sessions and 24 group therapy sessions, depending on the therapist’s recommendations and patient preferences. For all participants, session content included knowledge about the interplay of alcohol, HCV, and liver health; motivation, skills, and behaviors to reduce alcohol consumption; and improved health and well-being outcomes. After completing these core modules, participants and therapists worked together to decide which sessions to complete next.

Hep ART treatment also addressed obstacles that mental health issues may pose to alcohol reduction. Consultations with an on-site psychiatrist, who shared electronic medical records with medical providers and therapists co-located in the liver clinic, were available upon patient request or therapist recommendation. Patients may have received psychiatric evaluation, treatment, and/or follow-up by the psychiatrist for the intervention’s duration, if needed. Finally, Hep ART aimed to minimize transportation barriers by offering phone therapy after the initial in-person appointment, bus passes to reach the clinic, and passes to park at the clinic. In sum, the Hep ART intervention included individual therapy, group therapy, and possible psychiatric treatment in liver clinics. These services were coordinated by a team of co-located, multispecialty providers who collaborated and coordinated care for study participants.

Subjectivity Statement

Subjectivities, which include positions, statuses, and values held by investigators that are fluid and context-dependent, can affect and be affected by all stages of the research process (Gough & Madill, 2012; Peshkin, 1988). Systematic investigation of subjectivity can improve the trustworthiness of research findings by making both readers and researchers aware of predispositions that may influence the research situation (Morrow, 2005; Peshkin, 1988). Because qualitative research is an interpretive form of inquiry, examination of values that may affect interpretation is especially critical (Creswell, 2007). I therefore describe assumptions pertinent to the current investigation.

A value within the field of community psychology that I hold personally is that community members possess valuable expertise derived from their lived experiences. I therefore assume that the ideas, problems, and solutions articulated by research participants, including participants recruited from community settings, are vital sources of knowledge that can contribute to scientific understanding of integrated care delivery. My interactions with healthcare systems have also informed assumptions that underlie the current inquiry. As a student who has moved and changed providers frequently, my personal encounters in healthcare have been characterized by lack of continuity. I believe that my identity as a biracial Black woman has not only contributed to personal experiences of lapses in care quality, but also positioned me within historical and ongoing contexts of abuse at the hands of medical providers. These personal and vicarious experiences have led me to assume that efforts to integrate systems of care and improve patient experiences are worth pursuing.

Philosophical Orientation

Philosophical assumptions associated with a pragmatic approach to research have informed the current study. Pragmatic research does not seek to produce consensus or a singular truth, but rather uses methods that are necessary and feasible to produce holistic answers to a given research question (Clarke & Visser, 2019). Pragmatism embraces a focus on practical and actionable knowledge (Clarke & Visser, 2019). Given the study's emphasis on generating knowledge to inform real-world practice, as well as the practical constraints associated with using data collected by other researchers, a pragmatic approach was well-suited to address the aims and specific context of the current investigation. This approach also enabled me to reflect and improve on decisions made during the research process and the degree to which they support the aims of the study, rather than focusing primarily on how closely prescribed methodological rules were followed (Clarke & Visser, 2019).

I employed a case study methodology for this project. Qualitative case study research "allows for a holistic understanding of a phenomenon within real-life contexts from the perspective of those involved" (Boblin et al., 2013, p. 1268). According to Stake (2006), case study research in this study represents what will be studied, rather than a prescriptive strategy of inquiry. In this study, the multi-center Hep ART trial is the context in which cases of integrated healthcare delivery and enhanced referral processes were explored from patients' perspectives.

Research Design and Methods

The study involved a secondary analysis of semi-structured interviews (*n* = 34) that were conducted by other researchers, although these data have not been previously analyzed. Semi-structured interviews with participants in the Hep ART treatment condition (*n* = 15) and enhanced TAU condition (*n* = 19) of the Hep ART randomized controlled trial were conducted to help elucidate elements of integrated care that may contribute to improved health outcomes, including reduced alcohol consumption in the context of chronic HCV.

Study Setting

The HepART study was conducted at three health systems providing liver care. The Duke University Health System includes multiple academically-affiliated liver and infectious disease clinics based on campus and in the Durham, North Carolina, community, which on average required a 72-minute one-way commute for participants in the study. Participants reported an average 92-minute one-way commute to the University of North Carolina Medical Center - Chapel Hill, including academically-affiliated public liver clinics on-campus and one off-site clinic in Chapel Hill. The Durham VA Medical Center is the third system, which includes several diverse subclinics that were on average 121 minutes away from participants in the study.

Participants

Participants were recruited from the three health systems based on the following criteria: age 18 or older, ability to speak and understand English, previously confirmed HCV (regardless of treatment status), an AUDIT score above 3 for women and above 8 for men, consumption of at least 1 alcoholic beverage in the past 60 days, not engaged in substance abuse treatment, willingness to participate in the study for 12 months, and the ability to access transportation to attend at least one in-person therapy session. The current study included 34 participants from both the enhanced TAU and Hep ART treatment conditions in order to include perspectives on varying levels and features of care integration (i.e., co-location, warm handoffs during referrals). The mean age was 57 years old (*SD* = 6.6) and the majority of participants were male (67.6%; *n* = 23), which nearly mirrors the proportion of people living with chronic HCV who are male in the U.S. (Spach, 2021). Most participants were non-Hispanic Black (58.8%; *n* = 20) or non-

Hispanic White (32.4%; *n* = 11), while 5.9% of participants identified as another race or ethnicity, including biracial, multiracial, and Hispanic (*n* = 2). High school or below was most frequently reported as the highest level of education in this sample (50.0%; *n* = 17), followed by some college or associate degree (41.2%; *n* = 14). Most participants in this sample were at a low alcohol risk level according to WHO alcohol guidelines when they were interviewed (67.6%; *n* = 23).

Table 1.

Sociodemographic Characteristics of the Sample.

Sociodemographic Characteristics	HepART		Enhanced Referral		Full sample	
	M	*SD*	*M*	*SD*	*M*	*SD*
Age (years)	56	7.0	58	6.4	57	6.6
	N	*%*	*N*	*%*	*N*	*%*
Race-ethnicity						
Non-Hispanic Black, single racial	11	73.3%	9	47.4%	20	58.8%
Non-Hispanic White, single racial	3	20.0%	8	42.1%	11	32.4%
Biracial, multiracial, and/or Hispanic	1	6.7%	1	5.3%	2	5.9%
Unknown	0	0.0%	1	5.3%	1	2.9%
Gender						
Female	5	33.3%	5	26.3%	10	29.4%

Male	10	66.7%	13	68.4%	23	67.6%
Unknown	0	0.0%	1	5.3%	1	2.9%
Highest education level						
High school or below	6	40.0%	11	57.9%	17	50.0%
Some college associate degree	7	46.7%	7	36.8%	14	41.2%
Bachelor degree or above	2	13.3%	0	0.0%	2	5.9%
Unknown	0	0.0%	1	5.3%	1	2.9%
Alcohol risk level[a]						
Very high risk	1	6.7%	0	0.0%	1	2.9%
High risk	1	6.7%	5	26.3%	6	17.6%
Moderate risk	1	6.7%	2	10.5%	3	8.8%
Low risk	12	80.0%	11	57.9%	23	67.6%
Unknown	0	0.0%	1	5.3%	1	2.9%

[a] Alcohol risk level during the 30 days before the 3-month follow-up research visit using definitions from the World Health Organization.

Semi-Structured Interviews

The purpose of semi-structured qualitative interviews was to understand themes from lives of research participants, meanings constructed by participants in relation to the topic under investigation, and connections between the experiences of participants within and outside of the study sample (Kvale & Brinkmann, 2015; Ravitch & Carl, 2016). Interviews provide information that is both individualized and contextualized, thus offering insights into complexities of the phenomenon and whether experiences are shared or unique (Ravitch & Carl, 2016). Interviews were therefore appropriate for exploring perceptions of a complex, highly context-specific integrated care intervention, which may generate knowledge of barriers and facilitators that is potentially transferable to other integrated care settings.

Face-to-face interviews were conducted by research staff who were not blind to intervention status with participants in both conditions of the Hep ART study at three months, six months, and 12 months after baseline. A semi-structured interview protocol was used to guide interview conversations. The line of questioning in each interview varied depending on the participant's randomly assigned treatment arm, how often the participant attended individual and group therapy sessions, and whether the participant followed up on referral information, if applicable. Broadly, questions centered on participants' motivations to join the study, benefits derived from the intervention, barriers to treatment, alcohol consumption, and overall intervention feedback.

The current study used interviews collected at the patients' 3-month follow-up ($n = 34$) to capture participants' initial impressions of and experiences with the intervention. Interviews were conducted and audio recorded after receiving participants' informed consent. The interview recordings ranged from 5 to 55 minutes in length. Table 1 includes example items from the interview protocols for the treatment condition and enhanced TAU condition that correspond with the research questions that guided the current inquiry (see Appendices A and B for all interview questions included in analysis).

Table 2.

Example Interview Questions Selected for Data Analysis.

Research question	Example interview question included for analysis
What factors do patients perceive as facilitating their alcohol reduction in an integrated care intervention?	During your sessions with [your addiction therapist], you received information on your liver health, hepatitis C and alcohol. How has this information been important in helping you to drink less? Your sessions with [your addiction therapist] are scheduled for you in the same clinic where you see your doctor. How does this help you with coming to your appointments/groups with [your addiction therapist]?
What factors do patients perceive as barriers to their alcohol reduction in an integrated care intervention?	What makes it hard for you to go regularly to [one-on-one or group] sessions? Since starting Hep ART, has anything been going on in your life that has made it harder or easier to stop drinking?
What factors do patients perceive as facilitating their alcohol reduction in an enhanced referral process?	What did you find helpful about the information [referral] that you received from us [Hep ART study staff]? What made it easy or hard to follow-up on the scheduled appointment?
What factors do patients perceive as barriers to their alcohol reduction in an enhanced referral process?	What makes it hard for you to get support to help you cut back on drinking [go to alcohol treatment]? What things get in the way of you going to one-on-one appointments?

Note. Hep ART = Hepatitis C-Alcohol Reduction Treatment.

Data Analysis

A team of undergraduate and graduate student researchers transcribed audio recordings of each interview verbatim, remaining as close to the flow and language used during the original conversation as possible to ensure trustworthiness of the transcripts and rigor of the study (Poland, 1995). I analyzed these transcripts using theoretical thematic analysis, which, consistent with a pragmatic paradigm, is driven by analytic interest and leads to detailed analysis of a specific aspect of the data (Braun & Clarke, 2006). I began this iterative process with my advisor by conducting a close reading of the interview transcripts, taking note of initial impressions and ideas, words, or phrases that might serve as potential codes. After familiarizing ourselves with the data through review of transcripts, we conducted an initial coding of 10 (almost 30%) total interview transcripts–five transcripts from the Hep ART condition and five transcripts from the enhanced referral condition–with the current research questions in mind. While we coded for as many potential patterns as possible, we did not code interview data that was unrelated to the aims of this study. We met to discuss the codes we applied to each transcript and to reach a consensus on code names and definitions. The coding scheme we used for these ten transcripts was used to develop a codebook, which I then used to code the remaining transcripts.

Next, I organized codes into themes, which capture patterned responses and meanings in the data (Braun & Clarke, 2006). I continued to refine and reorganize the coding and thematic schemes until they sufficiently fit the data. Finally, I named themes and identified representative data extracts to illustrate the essence of each theme and sub-theme, which I discuss in the results section (Braun & Clarke, 2006). Participant's names were replaced with pseudonyms, which were assigned alphabetically. I used NVivo, a qualitative data analysis computer software package produced by QSR International (2022), to code, organize, and analyze the data. NVivo software features tools to help classify, sort, and arrange data. These tools enabled rigorous analysis of the data.

Quality Criteria and Procedures

Conceptual Depth

Data analysis began with interviews conducted three months after baseline data collection. Achieving conceptual depth was indicated by a range of evidence to exemplify concepts, their subtleties, and their connections to each other and existing literature (Nelson, 2016). After analyzing all interview data collected at 3-month follow-up, no new themes continued to emerge, indicating that sufficient conceptual depth had been attained.

Trustworthiness

To ensure that the results derive from experiences of research participants and not solely from my own assumptions, I have included a detailed methodological description in this document. I also promoted confirmability of results by leaving an “audit trail” to enable observers to examine choices made and procedures followed during the data analysis process (Shenton, 2004). I included annotations, analytic memos, and highlighted codes using NVivo for my advisor to review and ensure that the proposed data analysis process was followed with fidelity.

Ensuring credibility of research findings is key to promote trustworthiness of qualitative research (Guba, 1981; Shenton, 2004). One provision in the current study to establish credibility is the adoption of well-established methods of data collection (semi-structured interviews; Kvale & Brinkman, 2015) and data analysis (thematic analysis; Braun & Clarke, 2006). Additionally, frequent debriefing sessions with members of the research team and my advisor provided exposure to new ideas, interpretations, and opportunities to improve the quality of the investigation (Shenton, 2004).

Reflexive practices throughout the research process also promoted trustworthiness for the current study. I started the practice of critical reflection by explicitly stating my implicit assumptions in this proposal (Finlay, 2002; Morrow, 2005). Conscious attention to my subjectivities as I continued the investigation, which were captured through reflexive journaling, enabled me to trace intersections between “the researcher, the world, and the researcher’s experiences the world,” as well as the ways in which these intersections may inform my analysis

(Finlay, 2002, p. 533). I responded to reflexive journal prompts after coding sessions, including: “how am I making meaning from the data, and what is the rationale behind the analytical choices I make?”, “what emotional reactions are the data eliciting from me?”, and “how are my values impacting my decision-making?” Reflexivity was also fostered by monthly debriefing sessions with my advisor. Through this reflexive process, I discovered that my own negative experiences in fragmented care settings initially limited my attention to barriers in the integrated care condition and facilitators in the enhanced referral condition. Discussions with my advisor during codebook development helped ensure that my analysis adequately accounted for facilitating and barrier factors in both conditions.

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RESULTS

The results of the analyses are organized according to the stages of the intervention. First, themes related to perceived facilitators and barriers to alcohol reduction that were present prior to participating in the intervention are discussed. Second, themes that emerged in the context of SBIRT, which all participants in the study received, are presented. The third category of themes centers on participants' experiences in the Hep ART and enhanced referral conditions, including experiences in participants' lives outside of the interventions that impacted their alcohol use and engagement with treatment. In this category, particular attention was paid to areas of convergence and divergence in facilitators and barriers for each condition (i.e., Hep ART versus enhanced referral). The number of participants that reference each theme, as well as the codes that comprise each theme, are shown in Table 3 (see Appendix C).

Pre-Intervention Stage Factors

Motivation and Commitment to Change

> Well, I wanna live. I wanna live, so I gotta do something different.
> — Thomas, 64 (Hep ART condition)

Participants in both conditions reported having an internal sense of readiness to reduce their alcohol use prior to beginning alcohol reduction treatment, and this was a vital facilitator of alcohol reduction. Readiness manifested among participants when they problematized their current level of alcohol use and its consequences for various life domains, including their health, daily functioning, and interpersonal relationships. Participants also described an acceptance of their chronic HCV diagnosis, acknowledgment of its severity, and commitment to making the changes necessary to prevent the illness' progression. For example, Travis, 66 (enhanced referral condition) described his discontentment with the impact of substance use on his lifestyle:

> I’ve seen people going to meetings and be two years clean from drugs and alcohol, um, in programs and go right back out and do it. So, I feel like it's up to the person to make up in their mind that they don’t wanna drink or do drugs anymore. *And that’s where I am, you know, I just, you know, I don’t wanna live my life like that anymore…I just know I’m just tired of living like I used to live*. And then I have Hepatitis C and well, you know, and that doesn’t help that. Um, *I wanna live as long as I can. And I wanna be healthy. I wanna be a black man that’s old and healthy.*

Travis witnessed others’ attempts to change substance use behaviors and speculated that their lack of readiness might negate the potential effectiveness of alcohol reduction interventions. Further, he expressed a sense of exhaustion with his own circumstances and indicated that he was unwilling to continue with the status quo. He also identified alcohol use in the context of chronic HCV as a barrier to his hopes for longevity, and he perceived alcohol reduction as a strategy to improve his quality of life. This desire to live a healthier, longer, higher quality of life was perceived by many as a driving force in their efforts to reduce alcohol use and a necessary factor for success.

Harold, 65 (enhanced referral condition), similarly echoed the belief that a lack of motivation to change acted as a barrier to reduction of his alcohol use:

> I think the only thing that’s really gonna ever work is for me to do it like I did smoking, just quit cold turkey. But, you know, what made me do that was seeing my father dying from emphysema and knowing he was a chronic smoker. Um, I don’t know exactly what it’s gonna take to shock me into that to make me stop drinking. Now, I’m trying, I’m fighting with myself constantly to battle not drinking, but I don’t always win.

This excerpt suggests that for this participant, his father’s death from smoking-related causes compelled him to change his smoking behavior. While Harold was attempting to change his alcohol use, he had not yet experienced a comparable catalyst to abstain from alcohol completely. This suggests he had not cultivated the sense of readiness to change that many other participants perceived as key to optimal alcohol reduction outcomes.

Another dimension of the experience of readiness includes information-seeking in preparation for behavior change. Some participants who mentioned their commitment to change their drinking also mentioned a desire to “get more knowledge” about their HCV diagnosis and to learn “just how severe the situation is.” Others wanted to know “everything involved with the liver care” and learn about “my options that I can take to…get some treatment for it.” Some were also specifically interested in the impact alcohol use might have on their health as a person living with HCV, and as a participant from the Hep ART condition described it, “how my health was being affected by my drinking.” Additionally, a few participants joined the study explicitly seeking strategies to reduce their alcohol use. Gathering this information was seen by these participants as vital for developing a plan of action to change their behavior.

> I did want to know a little more about exactly what happens to- with my liver. So that’s one reason I came, cause I was concerned. I wanted to know, you know what I mean. With the alcohol- I really do know, but I wanted to hear it from someone. – Vickie, 67 (enhanced referral condition)

Vickie had an interest in learning about the health consequences of alcohol use from a reliable source–in this case, a medical provider with specialized knowledge of the interaction of alcohol use, liver functioning, and HCV. This suggests that for her, accessing trusted sources of information was seen as important for pursuing behavior change.

The results in this section indicate that a pre-existing interest in changing alcohol use is perceived as critical to actualize the potential of any kind of alcohol reduction intervention. For participants who had already had an internal commitment to change their drinking behavior, the Hep ART study appeared to them as an opportunity to pursue their goals. At least for some who were contemplating whether to attempt to reduce their alcohol consumption, participation in the study addressed their need to gather more information about the costs and benefits associated with making a lifestyle change. Conversely, some participants perceived a lack of determination or readiness to change as a barrier to reducing alcohol use.

SBIRT Factors

Candid, Compassionate, and Comprehensible Communication

According to participants' self-report, the style of communication used by liver doctors while delivering SBIRT was a substantial catalyst for alcohol reduction. The most frequently referenced feature of this communication style was what one participant described as "straight talk." Straight talk refers to "very blunt and straightforward" communication that emphasizes the severity of existing liver damage, the risk associated with current levels of alcohol consumption, and the trajectory of HCV disease progression. For example, Allen, 54, a participant who would later be assigned to the Hep ART condition recalled the conversation involving straight talk with his liver doctor:

> Allen: He told me straight up – "you keep drinking, your liver gone shut down and you gone die." And he say, "and I don't want you to die. So I want you to do the right things, and the right thing right now is to stop drinking. Stop drinking, take your medication, and come to these appointments so I can keep a check on you." That's what our conversation was based on.

> Interviewer: And what was your reaction when he said all of that?
>
> Allen: Oh, I was – I was, it was love to me. Yeah, I said, yeah I need all that.

Allen's use of the word "love" in their narrative is noteworthy. Despite the somewhat coarse presentation of his prognosis, Allen seemingly felt the doctor's intent to help him in the long run. This suggests that straight talk may represent a form of *tough love* to this participant.

Several participants recounted a similar discussion with their doctor as the participant above, including the warning that they may face premature mortality if they maintain their current drinking habits. Many participants indicated that this interaction was the first time their liver doctor had discussed drinking with them and for some, straight talk elicited intense emotional responses, such as sadness and fear. Some also mentioned that while it was clear based on the conversation during SBIRT that their alcohol use "wasn't a joking matter", their providers conveyed the seriousness of the situation "without it trying to scare me to death." Many participants, including Harold, 65 (enhanced referral condition), expressed appreciation for the transparent discussion of the current health challenges they were facing.

> I didn't feel as she was trying to make me feel bad or feel good. She was just trying to be as honest and open as she could about it. And, uh, very informative and, you know, tried to relate the seriousness but without being too, you know, overbearing.

Hearing their liver doctor convey the urgency of the need for behavior change helped spur some participants to action. For Shonda, 55 (Hep ART condition), straight talk even helped resolve her internal debate about seeking help for her alcohol use:

> It was very helpful because she was straightforward with telling me the effects that the drinking was having on my liver, and that I needed to change my ways before it got any worser. So that also helped me to make up my mind to know that I needed help to know

> with how to cope with this disease and get over it. Because I wasn't doing it on my own – I couldn't. I didn't know how.

Communication during SBIRT was also described by several participants as facilitating alcohol reduction when it was perceived as compassionate. This occurred when the liver doctor delivering SBIRT demonstrated a genuine concern for and commitment to the participant's health. For example, some participants recounted their doctors saying, "well I'm not gonna let you die," and that "she really, really wants me to stop." To some participants in the enhanced referral condition, these messages conveyed sincere investment in their wellbeing that may have been atypical during their previous healthcare experiences:

> I love those conversations. I don't want to hear them, you know, just bout like Mom and Dad tell you those stories, tell you those things right from wrong, you don't want to hear 'em. And you know they right! – Evelyn, 54 (Hep ART condition)

Again, this participant mentions "love" in her reaction to SBIRT. Evelyn compares her conversation with her liver doctor to past conversations with parents, which also suggests the element of tough love may be serving as a facilitator during this stage of the intervention. Isaiah, 62 (enhanced referral condition) and Barbara, 63, (enhanced referral condition) respectively, mentioned the care and concern they perceived from their provider:

> He was really concerned about my health. And I don't see it as him being there just for a job. The man sound concerned about my health, and how bad did I really want my health. Did I really want what I was coming in and asking for. And that was to me just, I loved it man, he was concerned, y'know, he was really concerned about *me*!

> …In fact I thanked him for speaking up and talking about it, that was the first time a physician had cared.

Interestingly, these participants appeared surprised or shocked by the provider’s care for them, even noting that it was the first time they perceived a physician cared for them. This experience of being cared for was so remarkable that some participants in the enhanced referral condition linked their liver doctor’s compassionate communication to their willingness to seek help for reducing their alcohol use:

> He really inspired me and touched my heart to seek out all the help that I could get. – Amy, 53 (enhanced referral condition)

> …it makes me feel that there is somebody that’s concerned about it, and wanting to help, and [that] makes you want to help yourself. – Harold, 65 (enhanced referral condition)

In addition to being candid and compassionate, a few participants perceived communication during SBIRT as a facilitator to alcohol reduction when it was comprehensible. Comprehensible communication occurred when liver doctors ensured that participants fully understood information regarding their HCV diagnosis and current health status, including by: (a) not using jargon and medical terminology to convey information; and, (b) providing information that participants could easily act upon. The quotes below demonstrate how the use of accessible language helped build patient-provider relationships and bolster confidence to reduce alcohol use.

> You know, he’s laid back and he, he don’t speak in a whole bunch of medical terms. He really actually, you know, it’s kinda hard to explain it, but I can kinda relate to him more than I can, uh, [...] physician that, you know, just talk medical terms. – Rashad, 45 (Hep ART condition)

> It was very beneficial, um, she explained to me, um, the process that I had to go through that I had to take. And she explained to me the “dos” and the “don’ts” and, um, I left and I was very optimistic. – Fred, 52 (enhanced referral condition)

Notably, the second quote indicates that Fred had a clear understanding of action items to follow after leaving their visit. Communication during SBIRT seemed to make alcohol reduction feel doable for this participant.

Participants also referred to their liver doctor as an important messenger for the SBIRT intervention. When asked how important their liver doctor has been in their efforts to drink less, several participants described their provider as “very important.” Some participants described a willingness to attempt their doctors’ recommendations because “their input means a lot,” and they viewed their provider as competent and trustworthy. Rashad echoed the important role their liver doctor played in his alcohol reduction efforts:

> That’s why I’m here right now. Because of my liver doctor. […] So, I would say she [is] pretty important. Cause the last 3 months I been doing a lot of stuff that I’ve never done before trying to stop drinking. – Rashad

The results presented here underscore the important role of the SBIRT delivered by liver doctors as a contributor to participants’ decision to pursue behavior change. Participants noted features of SBIRT that seem to prime them for alcohol reduction treatment. Specifically, many participants perceived straightforward communication during SBIRT regarding their alcohol use and liver health as a wake-up call that moved them to action. This type of communication relied less on medical jargon and seemed to prioritize clear understanding that moved patients toward greater insights into the consequences of their alcohol use as well as clear action steps to reduce their drinking. Paired with this candid discussion of health risks faced by participants and actions to reduce excessive alcohol use, liver doctors who conveyed an authentic concern for their patients' well-being appear to help induce behavior change. In addition, participants considered liver doctors' attempts to ensure they fully understood medical information shared during SBIRT, as well as thorough explanation of the referral and treatment process, as facilitators of alcohol reduction.

Intervention Stage Factors

Social and Environmental Influences During Treatment

> I know now what's going on inside of me and, if you know what's going on inside of you, you would think that you would not do it, right? But I realized it was not quite that easy […] 'cause [my therapist and I] were talking all like, look at football, basketball games, you look at a game that's all they got is beer coming onto the TV, y'know. Yeah and, and then there's other pressures, you got peer pressure, your friends […] I wouldn't say I got family pressure though. Nobody in my family is a drunk. They might occasionally take a drink but they don't *drink* drink, so like if I go in one of their houses I won't see a beer in their refrigerator. But I got other friends that if I go around certain friends, I know there's gonna be something going on over there, y'know.
>
> – Chris, 63 (Hep ART condition)

Regardless of treatment condition, several participants highlighted components of their social and environmental contexts that either impeded or supported the alcohol reduction intervention. One of the most commonly reported barriers among interviewees included others' drinking behavior and beliefs. Participants considered friends and family members who drink–especially those who fundamentally view the participants as people who drink–detrimental influences on their efforts to reduce alcohol. These family members and friends often expected and encouraged participants to drink while they were together. For example, one participant mentioned that "when people come to my house, they automatically say, 'give me a drink.'" Participants felt additional temptation while their friends and family consumed alcohol in their presence, saying that when exposed to their drinking, "it becomes more and more difficult to not want to have a beer." One participant recounted a conversation with a friend whose beliefs about drinking were not supportive of her own alcohol reduction goals:

> My friend, y'know, she called me one Friday night and said "what are you doing?" I said, "I'm sitting here drinking a beer, what are you doing?" [...] and I said "I hate I'm doing that," but I said "but I am, so I have to own it." She said, "but it's Friday night, so everybody deserves to live on a Friday night." And I thought, well that's not what you should've said. [...] And she didn't mean anything by it, but she was helping me justify that it was okay. – Barbara

In this excerpt, Barbara highlights how particular responses from important others can serve to undermine alcohol reduction. The participant, in her narrative, also seems to hope for a particular type of response that would be helpful, even though it challenges her inclination to drink.

Participants also described how the influence of peers who were unsupportive of alcohol reduction interacted with aspects of their environment to exacerbate barriers to behavior change. Some participants referenced the saturation of mass media with messages that encourage drinking, while others referred to the abundance of social settings where drinking is encouraged. Physical settings were also mentioned as a factor that influenced drinking behavior, with one participant mentioning that "because of where I live, it's alcohol around me." Evelyn mentioned how the combination of drinking habits in her social circle and conditions in her neighborhood made the choice to consume alcohol an easy one:

> Because of where I live, and you know it's alcohol, it's alcohol around me, you know? And I choose not, that's why I don't have many friends because the friends, the people, the people that's around me, they all drink. Liquor houses is everywhere. If I want to drink, I can sit around and drink all day long.

Conversely, several participants perceived peers or environments that discouraged drinking as facilitators for alcohol reduction. Some participants described making changes in their surroundings, such as ending friendships, avoiding events where drinking is likely, and temporarily relocating from settings where urges to drink occur, in order to reduce their alcohol use. Henry, 56 (Hep ART condition) recognized how the transition from living with others to being stably housed in his own apartment helped him feel a sense of control over his alcohol use:

> The problem with me was like, I'm moving from these people that, you stay in a person's house you gotta do what they do. Okay, so I was doing what the hell they do, they wanted me to do, so I got tired of that type of environment. So now I have breathing space where I can do what I want to do and then I have a limitation on what I drink. – Henry

This excerpt highlights the perceived importance of having "breathing space" from environments that encourage alcohol consumption. This experience is consistent with another participant who mentioned that when they experience urges to drink, they "have to leave and get out of that environment."

Many participants also acknowledged that receiving assistance and emotional comfort from their social networks made a positive impact on their efforts to change their drinking habits, including a participant from the enhanced referral condition:

> Interviewer: Okay. And, so, starting with the HepART study, has anything been going on in your life that has made it easier or harder for you to stop drinking?
>
> Greg: Yeah, […] my family members and my friends. Yeah, they wanted to see me do better. Yeah, cause sometimes when I get to drinking [...] they definitely help me out.

Greg, 57 (enhanced referral condition), highlights that both the sympathy expressed by his support system and the aid they offer when he is inclined to drink helped make alcohol reduction easier. Interestingly, this pairing of concern and action mirrors what participants perceived as a facilitator in the context of SBIRT delivered by liver doctors.

Peer Support Within Treatment. Several individuals who attended group therapy cited their social interactions with other attendees as a source of inspiration to change their drinking behavior. In both conditions, participants mentioned the benefits of exchanging ideas and stories within the group therapy setting. One benefit was the comfort derived from sharing space with others who also grappled with alcohol use, and “just knowing you’re not alone.” Some participants also reported gleaning lessons from others’ experiences about what strategies to try and what behaviors to avoid as they strived to reduce their alcohol use. A few participants also gained perspective on their own experiences by hearing about other people’s circumstances. They suggested that hearing other people’s stories, particularly those that they viewed as more challenging than their own, “makes you feel better about yourself.” Isaiah also mentioned that group therapy also expanded his own network of people he can rely on for support:

> They give me a whole lot of people in my circle that I can contact – I got thousands of phone numbers, but the thing is staying in contact with the people. And they can give you support- that’s what they are there for, support. And they participate in doing things that drug addicts and alcoholics don’t do.

While Isaiah recognizes that group therapy has increased his access to social support, he mentions that “the thing is staying in contact with the people.” This suggests that for him, the mere availability of support from peers does not necessarily facilitate alcohol reduction; realizing the benefits of this support requires effort and initiative. Additionally, Chris observed that while perspective taking within group therapy can make behavior change easier, internal motivation to change remains a requirement for alcohol reduction:

> Sometimes I hear some sad stories. I mean if you use it, I mean it could be quite helpful to you. But like, you gotta want to yourself too, but somebody else can always be helpful. They can't hurt, y'know?

These excerpts suggest that while the social aspect of group treatment was perceived as valuable for their alcohol reduction goals, it was not viewed as a sufficient factor for reduction to occur.

The findings presented in this section suggest that social networks, both within participants' interpersonal relationships and within the context of group therapy, can impede and facilitate alcohol reduction. Environmental factors, such as media messages about alcohol and the availability of alcohol and drinking settings in one's neighborhood, can also encourage or deter alcohol consumption. Several participants reported that making adjustments to their social and environmental circumstances helped facilitate drinking behavior changes.

Physical and Behavioral Health Education

It gave me an outlook on what it's really doing to my body, what effect it's really having on my body, which I didn't know. Now that I have the knowledge, I am better able to, y'know, conduct myself in a better way.
– Shonda

Multiple participants discussed receiving information regarding their physical and behavioral health as a facilitator for alcohol reduction. Before participating in the enhanced referral or Hep ART interventions, some participants described having limited knowledge about the interaction of alcohol, HCV, liver functioning, and overall health and well-being. Others were unaware that they were "really over the threshold with drinking," or that thought that they "just had hepatitis C and it was just a little bad, but [their doctor] said, 'no, it's already turned into cirrhosis.'" From the participants' perspective, particularly among those in the Hep ART condition, receiving education regarding the current condition of their liver and the contribution of alcohol to the progression of liver damage empowered participants to make more informed decisions regarding their alcohol use.

> They just let me know about my health and my liver. The dangers of my liver, and then me drinking alcohol, and the hepatitis C is working faster on my liver. So, they're letting me know that, you know, the damages that I was doing to myself. So, either it was that or the alcohol. Either we do it together or die, and I want to live. – Donna, 51 (Hep ART condition)

For Donna, being educated about the increased risk of mortality from her alcohol use helped her identify a reason to change her behavior – "to live."

In addition to information about the severity of their illness, participants frequently mentioned tools offered by their addiction therapists as beneficial for their progress toward alcohol reduction goals. Tools referred to specific strategies, such as deep breathing techniques or planned alternative activities to drinking, to self-regulate emotions when faced with stressful situations and to resist urges to drink when they arise. Some participants mentioned that they made previous attempts to quit drinking that were unsuccessful, but that having access to evidence-based approaches provided by addiction therapists helped facilitate their current alcohol reduction progress. Shonda described her perceptions of the impact of these tools on her mental and behavioral health:

> Shonda: We had went over this plan. For seven days for at least one hour. It was as much time as you need. Take each day of the week and you say what you're going to do, you're going to walk today, what you're going to have for dinner tomorrow, or y'know, read your bible- different- seven days of the week. It's something that you know you gon do

> that particular day. So that gives your mind focus on what you're going to do besides thinking about when you're going to get that next drink.
>
> Interviewer: Mhm. How has your drinking changed?
>
> Shonda: Tremendously. As like, cut in half. Cuz I feel so much better about myself. At that particular time I was down in the slumps, I was going through emotional problems, but y'know I've come out of it.

What seemed particularly helpful from Shonda's narrative is not just having tools or strategies but having used them in the context of treatment to the degree that she now has the insight that if she engages in specific activities, it will help her drink less.

Interestingly, while participants in both conditions mentioned the benefits of tools offered during addiction therapy, they were mentioned as a facilitator twice as frequently in the Hep ART condition. Moreover, whereas some of the tools offered by addiction therapists in both conditions were similar, one of the tools mentioned by Evelyn reflected the integrated nature of the treatment plan:

> Evelyn: I got a good liver, the cirrhosis of the liver, and a normal liver on my phone. I took a picture of it. She said, every time you think about a drink, look at your phone and look at that picture.
>
> Interviewer: Hm. Has that helped?
>
> Evelyn: [Laugh] Sometimes!

Evelyn went on to describe another facilitator that primarily surfaced in the Hep ART condition – increased attention to her health. Some participants suggested that the information they received regarding their level of alcohol use, their liver functioning, and the interplay of alcohol consumption and HCV helped them become more conscious of their drinking behavior and its health consequences. In turn, this awareness helped them reduce their drinking. This can be seen in the exchange below.

> Interviewer: During your sessions with [your addiction therapist] you’ve received information on your liver health, hepatitis C, and alcohol. Has that information been important in helping you drink less?
>
> Rashad: [immediately] Yes.
>
> Interviewer: How so?
>
> Rashad: Um, cause now I got to watch what I’m drinking. It’s, like I said, again it’s kinda at the forefront of my head now. Um, whereas before all the sessions I wasn’t even thinking about it, I was just drinking, drinking, drinking, not even thinking bout the repercussions. But now, I think more about the repercussions now.

Taken together, these results demonstrate that participants perceived access to education regarding the deleterious effects of alcohol use on their liver health and evidence-based tools to combat urges to drink as facilitators for alcohol reduction. For participants in the Hep ART condition, education that integrated physical and behavioral dimensions of health was seen as useful. A unique benefit that Hep ART condition participants attributed to this integration of information was increased conscious awareness of the consequences alcohol use would have on their liver functioning.

Beliefs About Direct-Acting Antiviral (DAA) Treatment

The cut down on drinking really started with the Harvoni treatment. That’s when I decided it’s time to do something, y’know. And um, and I knew I had a drinking problem, so I just tried to quit because I wanted the medicine to work.
– Elijah, 57 (Hep ART condition)

A moderate but meaningful proportion of participants reported beliefs about alcohol use in the context of DAA treatment that impelled them to reduce their drinking. One of these beliefs included the perception that alcohol consumption would interfere with the effectiveness of their medication. For some, the primary concern included the potential side effects that might occur as a result of alcohol use during treatment, saying that “we don’t know the after effect with alcohol.” For others, it is unclear whether this belief reflected an understanding that alcohol could continue to exacerbate existing liver damage even once HCV is cured, or the misperception that they may not benefit from DAA therapy if they were drinking alcohol. Charles, 66 (Hep ART condition), alluded to both of these potential reasons:

> Interviewer: During your sessions with [your addiction therapist], you received information on your liver health, Hep C, and alcohol. How has this information been important in helping you to drink less?
>
> Charles: Just realizing that if I drink, especially with taking medication, there’s a chance that the medications not gonna work properly. And I don’t wanna do this again. That’s, that’s the biggest thing. And then um, also, everybody, not just [my addiction therapist], but they all stress that drinking with a damaged liver is not a good thing.

Regardless of the specific concern, perceived repercussions of alcohol use during treatment was mentioned as a motivating factor to reduce drinking. Among those who were not yet receiving DAA treatment, concerns about eligibility for treatment and insurance coverage were also expressed. The importance of gaining eligibility for treatment as conveyed by their provider was motivating for some, including a participant who mentioned that if “[my doctor thinks] that I need it, I really must need it.” Others perceived access to medication and its subsequent health benefits as an “incentive” to reduce alcohol use.

> I can’t keep drinking and think I can get on this medication. It’s gone be the alcohol or the medication. So, at one time I chose the alcohol. But now, I got to choose to live so I’m gone choose the medication. – Evelyn

The results in this section indicate that among participants who were not receiving DAA treatment, insurance coverage restrictions on sobriety acted as a barrier to obtaining a cure for HCV; yet, they also improved motivation to reduce alcohol use. Among participants who were receiving DAA treatment, perceptions of the potential side effects of alcohol use or the perceived impact of alcohol on achieving a sustained virologic response helped facilitate alcohol reduction.

Structure and Location of Treatment

> You know I really enjoy coming, coming to [addiction therapist]. I wish I could do it more. And I wish I could come to group. But, without, you know I just don’t have transportation, the means. – Evelyn

A small, but meaningful proportion of participants reported the structure and location of treatment functions as a barrier to alcohol reduction. Regarding the treatment structure, a few participants from both conditions saw the social aspect of the group therapy format as a deterrent. For some, they simply did not consider themselves “a people person,” while others expressed discomfort with sharing personal details of their lives with a group of strangers. The former category of participants was unlikely to attend group sessions altogether, whereas the latter grew more comfortable with the social interactions in group therapy over time.

Another aspect of the treatment structure discussed in the Hep ART condition as a factor that limited participation was the long duration of treatment sessions. Some participants mentioned feeling anxious during hour-long appointments with their addiction therapist or bored during two-hour group sessions. Combined with substantial travel times to liver clinics, lengthy treatment sessions made it difficult for some participants to attend. For example, when asked why they do not attend group sessions, they simply stated “that would be extra time and travel.” Similarly, another Hep ART participant suggested that the only reason they did not attend group sessions was because “at the time they have it, I be at work, and I don’t live close by.” This finding is somewhat surprising as the co-location of services is seen as a hallmark benefit of integrated care.

A few participants acknowledged that co-located liver care and substance use treatment added some convenience regarding scheduling and traveling to appointments:

> You can schedule them back-to-back and you can make one trip. And people coming out of town like I am, that’s a real help…So I’d rather come out here once for 3 hours than come out there 3 times for one hour. – Rashad

However, when asked whether it would affect their ability to attend if therapy was scheduled at a different building than where they received liver care, participants unanimously agreed that it would not affect their attendance. Thus, from participants’ perspectives, co-location did not seem to facilitate alcohol reduction for those who did attend, and for those who were unable to attend, co-location did not address the barrier of distance and travel time. Interestingly, only one participant in the enhanced referral condition mentioned encountering challenges obtaining an appointment at the agency to which they were referred. This suggests that system navigation may not have been difficult for participants in this sample, and that co-location in the Hep ART condition did not necessarily generate much perceived added benefit for participants.

In addition to the time and travel burden associated with attending treatment, a few participants in both conditions were unable to participate due to lack of transportation. These participants expressed a desire to attend, suggesting that “if I could have, I think I would have, but like I said, transportation’s the main deal.” Taken together, these findings indicate that geographic inaccessibility posed a barrier to alcohol reduction for some participants, especially those in the Hep ART condition. Additionally, a treatment format that included social interactions with other patients deterred some participants from engaging in both arms of the intervention.

DISCUSSION

Previous studies have attributed improvements in health outcomes among people with HCV to integrated models of healthcare delivery; however, associations between integrated care and positive health outcomes have not been found consistently (Abrams, 2015; Farmanova et al., 2019; Nolte, 2021; Vold et al., 2019). Further, recent findings from the Hep ART randomized controlled trial revealed that while participants in an integrated care intervention experienced significant reductions in alcohol use over time, there were no significant differences in alcohol reduction compared to the enhanced referral condition, which was based on a more fragmented model of healthcare delivery (Proeschold-Bell et al., 2018).

Using a thematic approach to analyze interview data collected during the Hep ART randomized controlled trial, I examined participants' perceptions of facilitators and barriers to alcohol reduction. I identified six themes surrounding facilitators and barriers to alcohol reduction that surfaced before patients agreed to participate in the study, during the delivery of SBIRT, within the Hep ART and enhanced referral conditions, and outside of the healthcare setting. These themes consisted of: commitment to and preparation for change; candid, compassionate, and comprehensible communication; social and environmental influences; physical and behavioral health education; beliefs about DAA treatment; and the structure and location of treatment. While some dimensions within themes presented differently in each condition, these themes emerged among participants in both conditions, indicating that facilitators and barriers were largely similar across healthcare models. The unique factors in the Hep ART condition were not advantageous for alcohol reduction. Therefore, from patient perspectives, the key ingredients for alcohol reduction appear to be present in both conditions.

The Role of Readiness to Change

Commitment and preparation to change was a highly salient theme among participants in both conditions. Participants frequently referred to their own desire for a better quality of life as a primary driver of behavior change, and the absence of this desire was perceived to diminish the potential effectiveness of interventions. These findings are consistent with a stages of change approach to health behavior change (Prochaska & Velicer, 1997; Krebs et al., 2018), which suggest that readiness to change is a core element of the alcohol reduction and abstinence process.

The results of this study suggest that from participants' perspectives, the alcohol treatments tested in the Hep ART clinical trial may be particularly effective among people who are contemplating changes to their behavior or who are ready for action. It is possible that participants who were still participating in research interviews at three-month follow-up were a highly motivated subgroup of participants compared to the overall sample, which may explain why a pre-existing sense of readiness was frequently endorsed as a facilitator. However, it is important to note that motivation to change is a dynamic concept that can change throughout the alcohol reduction process (DiClemente et al., 2009). Stages of change theory recognizes behavior change as a non-linear process and emphasizes the need to tailor treatment type and level to patients' unique position in that process (Raihan & Cogburn, 2022). Providers can help facilitate patients' commitment to change by applying motivational interviewing techniques (Smedslund et al., 2011), which are a central element of SBIRT (Madras et al., 2009).

SBIRT: A Linchpin in Alcohol Reduction

Candid, compassionate, and comprehensible communication during SBIRT was the most frequently recurring theme in these data. The salience of this theme suggests that from participants' perspectives, the identification of hazardous substance use patterns, paired with brief treatment that clearly conveys care and the severity of participants' condition, is a critical facilitator for alcohol reduction among people with HCV. Previous work has demonstrated SBIRT as an effective tool for identifying hazardous alcohol use and reducing alcohol consumption among diverse patient populations and clinical settings, including people with HCV, although the strength of its effects on alcohol reduction varies across studies (Barata et al., 2017; McCance-Katz & Satterfield, 2012; Madras et al., 2009; Smith et al., 2012). The results of this study add to the body of evidence on which recommendations to provide a brief alcohol screening, intervention, and referral to appropriate treatment services to patients identified with HCV infection are based (ASAM, 2022; Smith et al., 2012). In fact, in this study of patient perspectives, SBIRT may been a primary driver of alcohol reduction, such that it mattered less whether substance use treatment was offered in fragmented or integrated care settings.

Further, these results suggest that from the patient perspective, the communication style of providers delivering SBIRT may influence subsequent alcohol reduction outcomes. Participants' reports of feeling loved by providers during SBIRT are consistent with previous work that suggests the "nurturing parent" role may be optimal for approaching patients who are not yet committed to behavior change (Krebs et al., 2018). Given the importance of SBIRT as an anchor to facilitate alcohol reduction among participants, future studies should continue to examine its feasibility and effectiveness across various healthcare settings in improving outcomes among people with HCV. Research should specifically examine aspects of patient-provider communication and relationship quality, such as compassion and mutual understanding of information, to discern the degree to which they impact alcohol reduction over time.

Given that all participants enrolled in the trial received SBIRT, this finding provides new insight into one factor that likely contributes to similar rates of alcohol reduction that occurred among participants in both conditions as reported by Proeschold-Bell and colleagues (2018). Specifically, this finding suggests that not only is SBIRT effective and feasible for liver clinics to implement (Proeschold-Bell et al., 2018), but it is also viewed as acceptable from the patient's perspective—particularly when compassionate, clear communication is used during its implementation. SBIRT can contribute to optimal alcohol reduction outcomes for patients in both integrated and fragmented models of care. Additionally, SBIRT can be implemented among patients with various levels of substance use severity, which is especially important for this population given that there is no safe level of alcohol use with chronic HCV infection (Agerwala & McCance-Katz, 2013). The acceptability and flexibility of SBIRT among patients with chronic HCV and various levels of alcohol consumption provide further support for its use among patients with HCV in both integrated and fragmented care settings.

Factors Within and Outside of the Treatment Setting

While readiness to change and liver doctor-delivered SBIRT were seen as primary facilitators of alcohol reduction, co-located physical and behavioral healthcare was seen as only somewhat beneficial by some participants in the Hep ART condition, and not at all beneficial by others. Co-location is a key feature of integrated care settings intended to reduce patient barriers to care by addressing multiple patient needs at the same site (Heath et al., 2013; McCarthy, 2015). Yet, since participants commuted an average of 72-121 minutes to the various liver clinics, it is likely that co-location did not improve access to care in this sample. In fact, co-location at sites over an hour away from participants' homes may have exacerbated barriers to care compared to the enhanced referral condition, in which referrals were tailored to the participants' location and transportation needs. This could explain why distance was explicitly referenced as a barrier only in the Hep ART condition. The unexpected finding that co-location was not perceived as a facilitator for this sample may therefore be attributable to the location of the liver clinics and not necessarily to the lack of value of co-location in integrated care settings in general. Still, geographic accessibility of integrated care sites may be an important consideration when interpreting weak or non-significant effects of integration on health indicators found in previous research (Hwang et al., 2013; Kwan & Nease, 2013; Nolte, 2021).

Contrary to previous research that underscores the difficulty of navigating fragmented care in the context of HCV (Brener & Treloar, 2009; Dowsett et al., 2017), participants in the enhanced referral condition rarely reported challenges with system navigation or care coordination (e.g., obtaining an appointment at the referral agency). Silos in healthcare provision were not perceived to impact alcohol reduction outcomes when accessed services were closer, but co-located services that were further away were seen as barrier to alcohol reduction. Nonetheless, the integration of HCV and substance use care was associated with significant reductions in alcohol consumption. This suggests that although integrated care may not be advantageous compared to an enhanced referral process, it may outperform treatment as usual in liver clinics at the time of data collection.

The finding that social and environmental factors were perceived by many participants to impact alcohol reduction efforts is not surprising. Socioecological frameworks for examining alcohol use posit that individuals are nested within family and peer networks, broader cultural norms and attitudes, and macro-level factors, such as exposure to advertising, and that factors at each level may influence each other (Bronfenbrenner & Morris, 2006; Sudhinaraset et al., 2016). Participants' awareness of the interaction and influence of these interpersonal, environmental, and societal contexts highlights the contribution of factors beyond the individual level to alcohol outcomes. Socioecological frameworks are therefore well-suited for understanding alcohol use among populations with HCV. Future studies should refine existing frameworks in order to include unique influences in HCV populations, such as stigma due to HCV status and substance use (ASAM, 2022), and to include factors that may promote, rather than hinder alcohol reduction.

Additionally, some participants perceived their unstable housing situation, limited access to transportation, or inflexible work schedules as negatively impacting their alcohol reduction outcomes. These factors influenced some participants' ability to attend therapy appointments altogether, while for others, they limited their capacity to utilize tools obtained during therapy. These findings are consistent with research that suggests that adverse SDOH are linked to adverse alcohol use and limited resources to address effects of use (Collins, 2016; Popovici & French, 2013; Sanner & Greene, 2020; Williams et al., 2019).

Opportunities for Quality Improvement

A substantial proportion of participants reported that the first time their doctor discussed their drinking habits was in the context of the alcohol reduction clinical trial. This finding is troubling given that treatment guidelines recommend alcohol cessation in patients with HCV and clinical interventions to support alcohol reduction (Smith et al., 2012). Of equal concern is the finding that some participants perceived their experiences with a provider who seems invested in their well-being as rare in their previous healthcare encounters. This finding suggests that participants in this sample may have a potential history of betrayal in healthcare (e.g., patients perceive that their provider acts against their best interests), which can erode trust in healthcare organizations (Smith, 2017). These results indicate opportunities to improve the quality of patient-provider interactions for patients with HCV. Further, participants recalled having limited awareness of the severity of their alcohol use, the progression of damage to their liver, and the consequences of alcohol use for liver functioning in the context of HCV before the trial. Considering participants' perceptions that receiving information on these topics facilitated alcohol reduction efforts, these results also suggest that opportunities to improve patient education about HCV and alcohol use exist.

Although alcohol reduction and abstinence are recommended for people with HCV, DAA treatment continues to be effective in developing a sustained virologic response during alcohol use. This study shows that some participants seemed to believe that curative treatment would not work if they continued drinking. This confusion is understandable because data collection for this study started during the years immediately following the advent of DAA treatment (Proeschold-Bell et al., 2018). However, it remains important to provide patients with clear information regarding the relationship between alcohol use and curative treatment. Participants also indicated that gaining access to DAA treatment by complying with payer restrictions for alcohol abstinence was an incentive for alcohol reduction. While it is encouraging that participants found an additional source of motivation for alcohol reduction, these findings exemplify the barriers to timely curative treatment that are imposed by some payers and plans among participants who are interested in DAA therapy. It is critical that to increase the proportion of people with HCV who obtain a cure, these barriers to treatment are addressed and that existing guidelines to provide DAA treatment regardless of alcohol abstinence are followed.

Implications

The pragmatic approach employed for this study enabled the identification of several implications for providers, practitioners, and policymakers. For healthcare professionals who provide care to people with HCV, an implication of this study is that efforts to reduce alcohol use should consider patients' level of readiness for change. Brief intervention strategies among participants who are not yet in the action stage might focus on education about the consequences of alcohol use in the context of HCV and the benefits associated with alcohol reduction. Among participants who are willing or preparing to take action at the time of alcohol screening, brief interventions may be used to enhance commitment to action (Sarkar et al., 2020). Further, providers who deliver SBIRT to people with HCV should aim to express genuine concern for their patients' health and offer actionable, clear information. When these elements of communication are present, SBIRT can be a useful strategy for preventing additional liver damage among people with chronic HCV who use alcohol. Given the feasibility and acceptability of implementing SBIRT in this clinical trial, training medical staff to deliver this intervention may be an effective approach to addressing the health concerns in this population, particularly in resource-constrained healthcare settings.

SBIRT may also be useful to reduce alcohol use beyond people with chronic HCV. Alcohol consumption can cause and contribute to morbidity and mortality in the context of various chronic conditions, such as cardiovascular and circulatory diseases, neurological conditions, mental and behavioral disorders, and several types of cancer (Shield et al., 2013). Implementing SBIRT in additional opportunistic settings could extend the health benefits of alcohol reduction and abstinence to broader patient populations.

Participants' reports of the impact of SDOH on their ability to participate in care and to achieve optimal alcohol reduction outcomes also have important implications for healthcare providers and systems. These results suggest that meeting the long-term health needs of people with HCV will require holistic, multi-level strategies to address factors outside of the healthcare setting. Among patients whose alcohol screening indicates hazardous drinking levels, providers should consider additional screenings to evaluate social and environmental factors, such as peer influences and neighborhood conditions, that may impact their ability to engage with treatment. Further, providers should incorporate strategies to address adverse SDOH developing alcohol reduction treatment plans. For example, coordinating access to care outside of traditional appointment times may reduce barriers to alcohol reduction in this population, and integrated care sites are well-positioned to address this challenge (McCarthy, 2015). Building capacity to address SDOH through patient care and/or community health strategies, such as referrals to community-based organizations, may also enhance the impact of integrated care sites on the health and well-being of people with HCV (Gottlieb et al., 2019).

An important implication from this study for integrated healthcare systems concerns geographic accessibility. In this sample, co-location was not perceived as advantageous when services were co-located at sites that were geographically inaccessible to participants. Healthcare systems should consider whether the sites where integrated care may be provided are located near their target populations before pursuing efforts to co-locate services. For example, using Geographic Information Systems to identify locations where HCV transmission risk is high may be useful when considering sites for optimal patient access (Ludden et al., 2020). In cases where geographic accessibility of integrated care may pose a concern, external referrals remain a viable option for reducing alcohol use, particularly when referrals are tailored to patients’ unique transportation and financial needs.

In addition to healthcare providers and systems, this study has implications for community psychologists and other practitioners involved in the evaluation of integrated care interventions. To ensure that patient voices are represented when evaluating the effectiveness of integrated care interventions, future research should collect qualitative data that measure participants' perceptions of specific features or levels of integration. Participant interviews provided key insights about facilitators and barriers to alcohol reduction in this study. Collecting data from the patients' perspective on experiences with care integration may enhance existing quantitative approaches that attempt to quantify essential elements of integration. Additionally, evaluators should also incorporate provider experiences with implementation of integrated care interventions, as well as perceived barriers and facilitators. Triangulating these perspectives may provide a more holistic understanding of factors impacting care experiences.

It is also critical for evaluators to incorporate measures of implementation fidelity, which is the extent to which the intervention-as-planned matched the intervention-as-delivered (Haynes et al., 2016). Implementation fidelity can moderate how interventions affect outcomes, and research has demonstrated associations between the degree of implementation fidelity and the degree of intervention success (Carroll et al., 2007). In the context of integrated care, implementation data are critical in order to discern precisely which features of integrated care are present, the level of integration for each feature, and their effects on alcohol reduction outcomes. Fidelity assessment can also help identify essential elements within context-specific interventions (Haynes et al., 2016). For example, the HepART randomized control utilized a number of protocols and assessments to ensure fidelity. These including manuals for behavioral health sessions and checklists to document the completion of specific modules.

Finally, this study has implications for healthcare policy. Participants in this study experienced obstacles to DAA treatment due to insurance restrictions on sobriety. Although interviews were conducted shortly after the advent of DAA, recent studies suggest that insurance coverage restrictions on sobriety and fibrosis continue to limit access to curative treatment

(Goodyear et al., 2020; Gutkind et al., 2022), despite guidelines emphasizing that all people with HCV are candidates for treatment, regardless of active alcohol use. Such restrictions cause unnecessary delays in treatment, yet early treatment is key for reducing personal and public health costs (ASAM, 2022). Healthcare policymakers, payers, and providers should therefore ensure that regardless of alcohol consumption, patients have access to curative treatment.

Limitations

There are some limitations to consider while interpreting the results of this study. Considering burdensome travel times to the treatment sites for most participants in the study, it is possible that those who were able to participate in interviews at three-month follow-up experienced fewer barriers to treatment than participants overall in the trial. It is also possible that participants in this sample had higher levels of motivation to reduce drinking than participants who were no longer attending research visits when three-month follow-up interviews were conducted. These limitations may have impacted the examination of barriers to alcohol reduction that may exist in patient populations with fewer resources or lower initial levels of motivation to attend treatment.

Records of potential comorbidities affecting participants in this sample were not available for the current study. Managing multiple health conditions can complicate coordination of various types of care, particularly in the context of fragmented care (Colorafi et al., 2021; Frandsen et al., 2015). It is unclear to what extent this may have affected participants’ ability to attend. Further, patients managing additional behavioral health concerns may use alcohol to self-medicate (Turner et al., 2018), which could have impacted the success of substance use treatment for participants not engaged in psychiatric care.

Despite these limitations, this study gleaned important insights regarding the importance of motivation to change drinking behavior, paired with SBIRT delivered by liver doctors using direct, sincere communication, to facilitate alcohol reduction among patients with HCV.

CONCLUSION

This study examined perceived facilitators and barriers to alcohol reduction in integrated and fragmented healthcare models. Theoretical thematic analysis of interviews with participants in the Hep ART randomized controlled trial revealed substantial overlap in factors from both settings. Results highlighted individual readiness to change drinking habits and SBIRT delivered by liver doctors as key facilitators in either healthcare model, while external social and environmental factors either impeded or bolstered alcohol reduction efforts. By using SBIRT to identify hazardous alcohol use among patients with a history of chronic HCV infection, health systems and providers can improve access to substance use treatment and subsequent alcohol outcomes in this population. Additionally, providing patients with clear information regarding their liver functioning and education about the interplay of alcohol use, chronic HCV, and liver functioning enables patients to make informed alcohol consumption decisions. Finally, the salience of social and structural barriers to alcohol reduction in this sample further supports the need for healthcare systems to address SDOH among people with HCV.

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APPENDIX A: INTERVIEW GUIDE FOR HEP ART CONDITION

Introduction

Now we're going to change gears. Instead of me asking you questions that have a set of answers to choose from, we're going to have more of a conversation. In this conversation, I am going to ask you broad, open questions that have no specific answers. There are no right or wrong answers to these questions. We hope to hear a description of your experiences and opinions.

The goal of this conversation is for us to understand what it is like for you to be participating in the HepART program with [Terra / VA therapist]. We would like to learn from you so that we can improve our program for patients who have had hepatitis C. We are specifically interested in three parts of this program. One part is filling out a one-page questionnaire that asks about your drinking then having your liver doctor talk to you about your drinking; a second part is group sessions about liver health and alcohol with [Terra / VA therapist]; a third part is talking with [Terra / VA therapist] one-on-one about liver health and alcohol.

First, there are a couple of reminders I want to share with you:

- I will be recording this interview using an encrypted digital recorder. The file will be saved in a secure folder on the protected Duke network. Only staff with a password will be able to access this recording. I am recording the interview so that staff who are going to write-up a summary can listen to what participants share with us.
- As always, you can choose not to answer any of the questions.
- Everything that you tell me in this interview is confidential which means that your name will not be associated with what you tell me in this interview. We will not share any of what you tell me with [Terra / VA therapist] or your liver doctor.

Some of the topics discussed in this conversation will include your experiences with the HepART program; what motivated you to participate in this study; and, what has worked and not worked to help you drink less alcohol. We know that some of these questions will not be relevant to you. Please let me know when a question does not relate to your choices or experience with HepART.

[BEGIN RECORDING]

Now I'm going to begin the recording.

Motivation to Join Study

1. Patients participate in studies for many different reasons. What were some of reasons that you decided to participate in the HepART study?

2. What were you hoping for when you started the HepART study?

HepART Treatment – SBIRT

Now I would like you to think back to the appointment that you had with your liver doctor [about three months ago] when you were told about HepART. At this medical appointment before you joined HepART, you may remember that you filled out a form about your drinking. Then, your liver doctor [Name] talked to you about your drinking. We would like to hear about your experiences talking with your liver doctor about your drinking.

3. What did you think of this conversation with your liver doctor?

   Possible probes:
   - i. *What was your reaction to the conversation?*
   - ii. *How did you feel at the time of the conversation?*
   - iii. *Were you surprised, annoyed, or relieved?*

4. Was this the first time your liver doctor talked to you about your drinking?

   a. IF NO*:*
   Was there something different about this time?

5. How important has your liver doctor been in you trying to drink less?

   a. IF AT LEAST SOMEWHAT IMPORTANT
   What does your liver doctor do that helps you to drink less?

   b. IF NOT AT ALL
   What could your liver doctor do differently to help you drink less?

[STAFF CAN BRING IN INFORMATION THAT HEARD DURING THE FOLLOW-UP RESEARCH VISIT.
INTERVIEWER SHOULD NOTE ANSWERS TO REDCap QUESTIONS (N7a, N7ai, N7bi, N10a-N10c.]

HepART Treatment – Overall Reflection on HepART Treatment
Now I would like to you to think back to when you first met [Terra / VA therapist]. As you probably know the program with [Terra/VA therapist] is set up so that you can attend weekly group sessions and one-on-one sessions every other week. Terra adjusts this schedule as needed based on the patient's situation. The program also provides the opportunity to see a psychiatrist here in the liver clinic.

6. Tell me about your experiences attending the HepART program with [Terra / VA therapist] and the HepART psychiatrist [IF PARTICIPANT HAS HAD APPTS. SEE N10c]?

   Possible probes:
   - i. *What do you like* <u>*most*</u> *about the HepART program?*
   - ii. *What do you like* <u>*least*</u> *about the HepART program?*

These next questions are about the HepART program with [Terra/VA therapist]. First we will ask you about one-on-one appointments with [Terra / VA therapist]. Then we will ask you about group sessions/classes with [Terra / VA therapist].
[EVERY PARTICIPANT WILL HAVE ATTENDED AT LEAST ONE INDIVIDUAL SESSION WITH [TERRA/VA THERAPIST] SO YOU WILL START WITH INDIVIDUAL SESSIONS.]

[INTERVIEWER SHOULD NOTE ANSWERS TO REDCap QUESTIONS (N7a, N7ai, N7bi, N10a-N10b).]

HepART Treatment – Individual Sessions

[IF <u>ATTENDS</u> INDIVIDUAL THERAPY]

7. What have one-on-one appointments with [Terra/VA therapist] been like for you ?

8. In what ways have one-on-one appointments with [Terra/VA therapist] been helpful to you?

   Possible probes:
   - i. *What have you liked about the one-on-one?*
   - ii. *What are some specific examples of what has been helpful to you?*
   - iii. *What have you learned from attending one-on-one sessions that you've applied to your daily life?*
   - iv. *How has your drinking changed?*
   - v. *How have your relationships changed [with family, friends, co-workers]?*
   - vi. *Are you talking more with your family, friends, co-workers about your drinking and hepatitis C diagnosis?*
   - vii. *How has the way you feel about yourself changed?*

9. What topics have you found especially helpful or not helpful to discuss with [Terra/VA therapist]?

10. What are topics do you wish you could you could discuss more with [Terra/VA therapist]?

11. What has <u>not been helpful</u> about one-on-one appointments?

    Possible probes:
    - i. *What have you disliked?*
    - ii. *What are some specific examples of what has NOT been helpful to you about the one-on-one appointments?*

12. What could make one-on-one appointments <u>more helpful</u> to you?

    Possible probe:
    - i. *What would make the one-on-one appointments <u>better</u>?*

13. How has [Terra/VA therapist] been helpful?

14. How do one-on one sessions compare to trying to drink less on your own?

15. If in the past, you have had one-on-one sessions with a counselor, what worked and didn't work then that is different from your experience with [Terra/VA therapist]?

[IF <u>DOES NOT</u> <u>REGULARLY</u> ATTEND INDIVIDUAL THERAPY]

16. What are some reasons you do not attend more sessions?

17. What makes it hard for you to go regularly to one-on-one sessions?

Possible probes:

- *i. How does your financial situation (money), insurance, transportation and other such things affect your ability to go?*
- *ii. How does the amount of support from friends or family, or other people affect you going?*
- *iii. How does having hep C or having liver problems affect you going?*

18. What would help you attend more regularly?

[IF DOES <u>NOT ATTEND</u> INDIVIDUAL THERAPY]

19. What things get in the way of you going one-one-one appointments?

Possible probes:

- *i. What are some reasons that you do not go to one-on-one sessions?*
- *ii. What makes it difficult for you to attend one-one-one appointments?*
- *iii. What would help you attend one-on-one sessions?*
- *iv. How does your financial situation (money), insurance, transportation and other such things affect your ability to go?*
- *v. How does the amount of support from friends or family, or other people affect you going?*
- *vi. How does having hep C or having liver problems affect you going?*

20. What would help you attend one-on-one sessions?

21. If in the past, you have had one-on-one sessions with a counselor, what worked and didn't work for you then?

[IF PARTICIPANT HAS NOT ATTENDED GROUP SESSIONS SKIP TO Q28.]

HepART Treatment – Group Sessions [Do we want to include attendance at AA/NA?]

[IF <u>ATTENDS</u> GROUP THERAPY??/NA/AA]

22. What have group sessions/classes with [Terra/VA therapist] been like for you ?

23. In what ways have groups been <u>helpful</u> to you?

Possible probes:

- *i. What have you liked about groups?*
- *ii. How important have group members been in helping you to drink less?*
- *iii. What are some specific examples of what has been helpful?*
- *iv. What have you learned from attending group sessions that you've applied to your daily life?*
- *v. How has your drinking changed?*
- *vi. How have your relationships changed [with family, friends, co-workers]?*

vii. *Are you talking more with your family, friends, co-workers about your drinking and hepatitis C diagnosis?*
viii. *How has the way you feel about yourself changed?*

24. What topics have you found especially helpful or not helpful to discuss with [Terra/VA therapist]?

25. What are topics do you wish you could you could discuss more with [Terra/VA therapist]?

26. What has <u>not been helpful</u> about groups?

    Possible probes:
    i. *What have you disliked?*
    ii. *What are some specific examples of what has NOT been helpful to you about the group sessions/classes?*

27. What could make group sessions <u>more helpful</u> to you?

    Possible probe:
    i. *What would make group sessions <u>better</u>?*

28. How has [Terra/VA therapist] been helpful?

29. How do group sessions compare to trying to drink less on your own?

30. If in the past, you have been to group sessions, what worked and didn't worked then that is different from your experience with [Terra/VA therapist]?

[IF DOES <u>NOT REGULARLY ATTEND</u> GROUP THERAPY??/NA/AA]

31. What are some reasons you do not attend more sessions?

32. What makes it hard for you to go regularly to group sessions?

    Possible probes:
    i. *How does your financial situation (money), insurance, transportation and other such things affect your ability to go?*
    ii. *How does the amount of support from friends or family or other people affect you going?*
    iii. *How does having hep C or having liver problems affect you going?*

33. What would help you attend group sessions more regularly?

[IF <u>DOES NOT ATTEND</u> GROUP THERAPY]

34. What things get in the way of you going to group sessions?

Possible probes:

- i. *What are some reasons that you do not go to group meetings?*
- ii. *What makes it difficult for you to attend groups?*
- iii. *What would help you attend more groups?*
- iv. *How does your financial situation (money), insurance, transportation and other such things affect your ability to go?*
- v. *How does the amount of support from friends or family or other people affect you going?*
- vi. *How does having hep C or having liver problems affect you going?*

35. What would help you attend group sessions?

36. If in the past you have gone to group sessions, what worked and didn't work for you then?

HepART Treatment – Education

During your sessions with [Terra/VA therapist] you received information on your liver health, hepatitis C and alcohol.

37. How has this information been important in helping you to drink less?

Possible probe:

- i. *How have you used this information?*

HepART Treatment – Integrated Care

[Terra/VA therapist] and your liver doctor work together to create a plan for improving your liver health.

38. Has having your liver doctor and [Terra/VA therapist] work together been important in helping you cut back on drinking?

IF YES*:*
a) How has this helped you?
b) What has been different about your appointments with your liver doctor since you've been in the HepART program?

39. How has Terra helped you with your liver doctor appointments or your liver health care in general (like contacting your liver doctor, getting information you need about your appointments or medication, and so on)?

40. [How has liver doctor helped you with drinking less alcohol?]

Your sessions with Terra [and Dr. Mannelli/Dr. Garbutt/Dr. Stein] are scheduled for you in the same clinic where you see your liver doctor.

41. How does this help you with coming to your appointments/groups with Terra [and Dr. Mannelli/Dr. Garbutt/Dr. Stein]?

42. If your therapy appointments had always been scheduled in a different building at Duke, would this affect whether you would come to your appointments or how often you would come to your appointments?

Drinking

Now I would like to ask you about how your drinking has changed.

<u>[INTERVIEWER CAN REFER TO RELEVANT INFORMATION THAT THE PARTICIPANT MENTIONED DURING THE REDCAP INTERVIEW]</u>

43. Since starting HepART, has anything been going on in your life that has made it harder or easier to stop drinking?

HepART Treatment – Overall Feedback

We are coming to the end of our interview. The information you have shared with me will help us figure out what works and does not work about HepART and how to make it better.

44. Is there anything else you would like me to know about what you think is helpful and not helpful in supporting people who have or have had hepatitis C to drink less alcohol?

Closing

45. In closing, would you tell me a little about what you hope for in the next three months? What are you looking forward to?

Thank you very much for taking this time to share this information and allowing me to better understand your experiences!

Impact of HepART

7. How has the program with [Terra/VA therapist] been helpful to you so far?

   Possible probes:

   ii. *What about HepART <u>has</u> been helpful to you?*
   iii. *What about HepART <u>has not</u> been helpful to you*
   iv. *What would make the program <u>better</u>?*
   v. *What have you learned from attending HepART sessions that you've applied to your daily life?*

APPENDIX B: INTERVIEW GUIDE FOR ENHANCED TREATMENT AS USUAL CONDITION

Introduction

Now we're going to change gears. Instead of me asking you questions that have a set of answers to choose from, we're going to have more of a conversation. In this conversation, I am going to ask you broad, open questions that have no specific answers. There are no right or wrong answers to these questions; rather we hope to hear a description of your experiences and opinions. We know that some of these questions will not be relevant to you. Please let me know when a question does not relate to your choices or experience.

The goal of this conversation is for us to understand what it is like for you to be participating in the HepART study. We would like to learn from you so that we can improve our program for patients who have had hepatitis C. We are specifically interested in three parts of the study. One part is filling out a one-page questionnaire that asks about your drinking then having your liver doctor talk to you about your drinking; a second part is the process of getting a referral to an alcohol treatment program at the end of your first appointment with HepART; the last part is going to one-on-one or group sessions with a counselor to help you cut down on your drinking.

First, there are a couple of reminders I want to share with you:

- I will be recording this interview using an encrypted digital recorder. The file will be saved in a secure folder on the protected Duke network. Only staff with a password will be able to access this recording. I am recording the interview so that staff who are going to write-up a summary can listen to what participants share with us.
- As always, you can choose not to answer any of the questions.
- Everything that you tell me in this interview is confidential which means that your name will not be associated with what you tell me in this interview. We will not share any of what you tell me with your liver doctor.

Some of the topics discussed in this conversation will include your experiences with the HepART study; what motivated you to participate in this study; and, what has worked and not worked to help you drink less alcohol.

[BEGIN RECORDING]

Now I'm going to begin the recording.

Motivation to Join Study

1. Patients participate in studies for many different reasons. What were some of the reasons that you decided to participate in the HepART study?

2. What were you hoping for when you started the HepART study?

HepART Controls – SBIRT

Now I would like you to think back to the appointment that you had with your liver doctor [about three months ago] when you were told about HepART. At this medical appointment before you joined HepART, you may remember that you filled out a form about your drinking. Then, your liver doctor [Name] talked to you about your drinking. We would like to hear about your experiences talking with your liver doctor about your drinking.

3. What did you think of this conversation with your liver doctor?

    Possible probes:
    - i. *What was your reaction to the conversation?*
    - ii. *How did you feel at the time of the conversation?*
    - iii. *Were you surprised, annoyed, or relieved?*

4. Was this the first time your liver doctor talked to you about your drinking?

    a. IF NO*:*
    Was there something different about this time?

5. How important has your liver doctor been in you trying to drink less?

    a. IF AT LEAST SOMEWHAT IMPORTANT
    What does your liver doctor do that helps you to drink less?

    b. IF NOT AT ALL
    What could your liver doctor do differently to help you drink less?

HepART Controls – Referral to Treatment
[HERE STAFF CAN BRING IN INFORMATION THAT IS DOCUMENTED IN THE BASELINE STAFF CHECKLIST (REDCap Form 6 – Baseline Staff Checklist) REGARDING THE REFERRAL. THIS COULD BE TO WHAT PROVIDER THE PARTICIPANT GOT A REFERRAL. THE REFERRAL MAY BE AN ACTUAL APPOINTMENT THAT WAS SET-UP AT THE HEPART BASELINE VISIT OR SIMPLY A LIST OF PROVIDERS/AA MEETINGS THAT HEPART STAFF GAVE the PARTICIPANT.]

[DURING FOLLOW-UP RESEARCH VISIT, **INTERVIEWER SHOULD ALSO NOTE ANSWERS TO REDCap QUESTIONS (N7a, N7ai, N7bi, N11a-N11f.]**

Now I would like you to think back to the first appointment that you had with HepART staff; the appointment when you found out to which group you were assigned. At this research appointment you were given information about [programs and/or providers] who could support you in reducing your drinking.

[IF REFERRAL WAS <u>ONLY INFORMATION</u> ABOUT PROVIDER OPTIONS]

6. After your HepART appointment, what did you do with the information [referral]?

    Possible probes:
    - i. *Did you call the numbers that you were given?*

   ii. *What was your experience with calling to find a counselor or a program to set-up an appointment?*
   iii. *Did you make an appointment and go to it?*

7. What made it [easy or hard] to follow-up on the information?

8. What did you find helpful about the information [referral] that you received from us [HepART study staff]?

9. What would have been more helpful to you when you received the referral information?

[IF REFERRAL WAS A SCHEDULED APPOINTMENT]

10. Did you attend the appointment to a counselor that we scheduled for you at your first HepART meeting, (when we first asked you all these question and collected your urine)?

    [DID ATTEND APPOINTMENT]

11. What made it easy or hard to follow-up on the scheduled appointment?

    [DID NOT ATTEND APPOINTMENT]

    12. What are some reasons that you did not go to the appointment?

    13. What could have helped you get to the appointment?

⍰ IF ATTENDED NO APPOINTMENTS SINCE BASELINE, GO TO Q41

[Q14-Q40: ONLY FOR PARTICIPANT WHO HAS ATTENDED 1+ ALCOHOL TREATMENT SESSION(S) – INDIVIDUAL OR GROUP.]
[DURING FOLLOW-UP RESEARCH VISIT, INTERVIEWER SHOULD NOTE ANSWERS TO REDCap QUESTIONS (N7a, N7ai, N7bi, N11a-N11f.)]

HepART Controls – Alcohol Treatment Overview

[INTERVIEWER CAN MENTION THE INFORMATION COLLECTED IN REDCap SECTION N INSTEAD OF ASKING #14]

14. Since joining HepART [after being referred], what type of counselor/provider have you met with or in what alcohol treatment program have you participated?

    Possible probes:
    i. *Have you met one-on-one with a counselor?*
    ii. *Have you attended classes or group sessions?*
    iii. *Have you attended AA or NA meetings?*

HepART Controls – Individual Sessions

[IF ATTENDS INDIVIDUAL THERAPY]

15. What have one-on-one appointments been like for you?

16. In what ways have one-on-one appointments been helpful to you?

    Possible probes:
    - i. *What have you liked about the one-on-one?*
    - ii. *What are some specific examples of what has been helpful to you?*
    - iii. *What have you learned from attending one-on-one sessions that you've applied to your daily life?*
    - iv. *How has your drinking changed?*
    - v. *How have your relationships changed [with family, friends, co-workers]?*
    - vi. *Are you talking more with your family, friends, co-workers about your drinking and hepatitis C diagnosis?*
    - vii. *How has the way you feel about yourself changed?*

17. What has not been helpful about one-on-one appointments?

    Possible probes:
    - i. *What have you disliked?*
    - ii. *What are some specific examples of what has NOT been helpful to you about the one-on-one appointments?*

18. What could make one-on-one appointments more helpful to you?

    Possible probe:
    - i. *What would make the one-on-one appointments better?*

19. How has your counselor [therapist, provider] been helpful?

20. How do one-on one sessions compare to trying to drink less on your own?

21. If in the past you have had one-on-one sessions with a counselor, what worked and didn't work then, that is different from your recent experience in one-on-one sessions?

[IF DOES NOT REGULARLY ATTEND INDIVIDUAL THERAPY]

22. What are some reasons you do not attend more sessions?

23. What makes it hard for you to go regularly to one-on-one sessions?

    Possible probes:
    - i. *How does your financial situation (money), insurance, transportation and other such things affect your ability to go?*
    - ii. *How does the amount of support from friends or family people affect you going?*
    - iii. *How does having hep C or having liver problems affect you going?*

24. What would help you attend more regularly?

[IF DOES <u>NOT ATTEND</u> INDIVIDUAL THERAPY]

25. What things get in the way of you going one-one-one appointments?

Possible probes:

i. *What are some reasons that you do not* go to one-on-one sessions*?*
ii. *What makes it difficult for you to attend one-one-one appointments?*
iii. *What would help you attend one-on-one sessions?*
iv. *How does your financial situation (money), insurance, transportation and other such things affect your ability to go?*
v. *How does the amount of support from friends or family people affect you going?*
vi. *How does having hep C or having liver problems affect you going?*

26. What would help you attend one-on-one sessions?

27. If in the past you have had one-on-one sessions with a counselor, what worked and didn't work for you then?

HepART Controls – Group Sessions

[IF <u>ATTENDS</u> GROUP THERAPY/NA/AA]

28. What have group sessions/classes/NA or AA been like for you?

29. In what ways have groups been <u>helpful</u> to you?

Possible probes:

i. *What have you liked about groups?*
ii. *How important have group members been in helping you to drink less?*
iii. *What are some specific examples of what has been helpful?*
iv. *What have you learned from attending group sessions that you've applied to your daily life?*
v. *How has your drinking changed?*
vi. *How have your relationships changed [with family, friends, co-workers]?*
vii. *Are you talking more with your family, friends, co-workers about your drinking and hepatitis C diagnosis?*
viii. *How has the way you feel about yourself changed?*

30. What has <u>not been helpful</u> about the groups?

Possible probes:

i. *What have you disliked?*
ii. *What are some specific examples of what has NOT been helpful to you about the group sessions?*

31. What could make the groups <u>more helpful</u> to you?

    Possible probe:

    i. *What would make group sessions <u>better</u>?*

32. How has the counselor [leader, therapist, provider] been helpful?

33. How do group sessions compare to trying to drink less on your own?

34. If in the past you have been to group sessions, what worked and didn't worked then that is different from your recent experience with groups?

[IF DOES <u>NOT REGULARLY ATTEND</u> GROUP THERAPY/NA/AA]

35. What are some reasons you do not attend more sessions?

36. What makes it hard for you to go regularly to group sessions?

    Possible probes:

    i. *How does your financial situation (money), insurance, transportation and other such things affect your ability to go?*
    ii. *How does the amount of support from friends or family people affect you going?*
    iii. *How does having hep C or having liver problems affect you going?*

37. What would help you attend group sessions more regularly?

[IF <u>DOES NOT ATTEND</u> GROUP THERAPY]

38. What things get in the way of you going to group sessions?

    Possible probes:

    i. *What are some reasons that you do not go to group meetings?*
    ii. *What makes it difficult for you to attend groups?*
    iii. *What would help you attend more groups?*
    iv. *How does your financial situation (money), insurance, transportation and other such things affect your ability to go?*
    v. *How does the amount of support from friends or family people affect you going?*
    vi. *How does having hep C or having liver problems affect you going?*

39. What would help you attend group sessions?

40. If in the past you have gone to group sessions, what worked and didn't work for you then?

[PARTICIPANT WHO <u>HAS NOT ATTENDED</u> ALCOHOL TREATMENT]

Barriers to Treatment

Now, I would like to ask you about things that make it difficult to get help with drinking less alcohol.

41. What makes it hard for you to get support to help you cut back on drinking [go to alcohol treatment]?

    Possible probes:

    1. *What makes it difficult for you to attend one-on-one or group sessions?*
    2. *How does your financial situation (money), insurance, transportation and other such things affect your ability to go?*
    3. *How does the amount of support from friends or family people affect you going?*
    4. *How does having hep C or having liver problems affect you going?*

42. What would help you with getting support to cut back on your drinking?

Drinking

Now I would like to ask you about how your drinking has changed.

[INTERVIEWER CAN REFER TO RELEVANT INFORMATION THAT THE PARTICIPANT MENTIONED DURING THE REDCAP INTERVIEW]

43. Since starting with the HepART study, has anything been going on in your life that has made it harder or easier to stop drinking?

Overall Feedback

We are coming to the end of our interview. The information you have shared with me will help us figure out what works and does not work about HepART and how to make it better.

44. Is there anything else you would like me to know about what you think is helpful and not helpful in supporting people who have or have had hepatitis C to drink less alcohol?

Closing

45. In closing, would you tell me a little about what you hope for the next three months? What are you looking forward to?

Thank you very much for taking this time to share this information and allowing me to better understand your experiences!

APPENDIX C: FREQUENCY OF REFERENCES PER THEME

Table 3

Frequency of Participants who Endorsed Each Theme and Subtheme per Condition.

Theme/Subtheme	Number of participants who reference theme	
	Referral Condition	Hep ART Condition
	N, %	*N*, %
Motivation to change	14 (73.7%)	12 (80.0%)
Readiness to change	13 (68.4%)	9 (60.0%)
Not ready to change	3 (15.8%)	1 (6.6%)
Desire to learn	9 (47.4%)	6 (40.0.%)
Candid, compassionate, comprehensible communication	16 (84.2%)	14 (93.3%)
Straight talk	9 (47.4%)	13 (86.7%)
Compassionate	8 (42.1%)	4 (26.7%)
Communicates for comprehension	2 (10.5%)	5 (33.3%)
Social and environmental influences	12 (63.2%)	13 (86.7%)
Environment encourages drinking	1 (5.3%)	3 (20.0%)
Environment deters drinking	3 (15.8%)	3 (20.0%)
Others' negative drinking expectations	4 (21.1%)	5 (33.3%)
No accountability or support	2 (10.5%)	0 (0.0%)
Benefits of group therapy dynamics	5 26.3%)	2 (13.3%)
Support from social networks	6 (31.6%)	3 (20.0%)
Physical and behavioral health education	14 (73.7%)	12 (80.0%)
Gaining alcohol reduction tools	7 (63.6%)	11 (73.3%)
Health information	10 (52.6%)	10 (66.7%)

Increased attention to health	1 (5.3%)	6 (40.0.%)
Beliefs about direct-acting antivirals	6 (31.6%)	5 (33.3%)
Structure and location of treatment	4 (21.1%)	10 (66.7%)
Long distance to travel	0 (0.0%)	3 (20.0%)
Lack of transportation	2 (10.5%)	3 (20.0%)
Social aspect of treatment	2 (10.5%)	3 (20.0%)
Duration too long	0 (0.0%)	3 (20.0%)
Convenience of co-location	0 (0.0%)	5 (33.3%)

Note. Hep ART = Hepatitis C-Alcohol Reduction Treatment.