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Theme: Opportunities and Dilemmas with Tele-Addiction Services

THEMATIC ARTICLES

- TELEMEDICINE FOR CAPACITY BUILDING
- VIRTUAL CLINICS & REAL RECOVERY
- ETHICS IN TELE-ADDICTION SERVICES

SPECIAL COVERAGE

50 Years of MTF Survey

SCAN ME

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Table of Contents

Editorial

Technology, Training, and the Promise of Closing India's Addiction Treatment Gap

Vinit Patel, Ravindra Rao

Substance use disorders (SUD) represent one of the most significant yet persistently under-addressed public health challenges in India. The last national survey on magnitude of substance use in India shows that over 5.7 crore require professional help due to harmful use or dependence of alcohol. Opioids, cannabis, sedatives, and inhalants together affect several additional crores. Despite the availability of effective pharmacological and psychosocial interventions, treatment coverage still remains strikingly low. Among individuals with alcohol dependence, only one in 38 receives any form of treatment, and among those dependent on illicit drugs, only one in four has ever accessed care (1). This profound treatment gap is a central concern of addiction psychiatry in India today.

There are multiple structural and systemic factors contributing to this gap. There are limited specialists treating individuals with addictive disorders. The existing laws and regulations often act as impediment to use of appropriate medications for treatment of addictive disorders. There are also urban–rural inequities in availability of addiction treatment services. An important under-emphasized contributor is also the inadequate integration of addiction medicine into undergraduate medical education. Most Indian medical graduates enter clinical practice with minimal exposure to screening, brief interventions, withdrawal management, or long-term care for SUD. This leads to most clinicians not able to provide early identification and intervention at primary and secondary care levels, where the majority of patients first present with health problems secondary to SUD. Compounding this is India's vast geography and uneven distribution of trained professionals. Quality addiction care remains concentrated in a small number of tertiary centres, rendering access difficult for large sections of the population. These realities demand solutions that can extend reach without proportionately increasing specialist manpower.

Over the last decade, and particularly following the COVID-19 pandemic, technology has reshaped healthcare delivery in India. Teleconsultations, digital therapy platforms, electronic health records, AI-assisted diagnostic interpretation, and digital payment systems have become embedded in routine care. COVID-19 functioned as a critical catalyst, rapidly reducing professional and public resistance to remote care and normalising telemedicine across specialties. India's context is particularly conducive to this shift. High mobile phone penetration, inexpensive data, and widespread familiarity with platforms such as WhatsApp have facilitated rapid uptake of digital services. Importantly, usage has extended beyond entertainment into essential domains such as healthcare. Government initiatives like e-Sanjeevani have institutionalised teleconsultation at scale, while broader digital health initiatives aim to integrate records and services across the system.

Addiction psychiatry is uniquely suited to tele-based models when viewed through a chronic disease management lens, akin to conditions such as diabetes or hypertension. SUDs follow a chronic, relapsing–remitting course and require sustained engagement over time, encompassing periodic monitoring, medication adjustments, relapse prevention, and ongoing psychosocial support. These core elements of continuing care are predominantly interview-based and longitudinal, making them well suited to tele-care. Tele-based models therefore hold particular promise for improving continuity, retention, and long-term follow-up in addiction treatment, especially in geographically underserved settings, while acute and high-risk phases continue to require in-person assessment and management (2,3).

Telepsychiatry is not a novel concept. Decades of research demonstrate that videoconferencing-based psychiatric assessments are reliable and that clinical outcomes are broadly comparable to face-to-face care across multiple disorders (3,4). Meta-analyses of randomised controlled trials further suggest non-inferiority of telepsychiatry for many clinical outcomes, particularly when delivered within structured and protocol-driven models of care (5). Importantly, evidence focused care, specifically in SUD suggests comparable outcomes to in-person care across alcohol, opioid, and tobacco use disorders, with several studies reporting improved retention and continuity when telepsychiatry is embedded within hybrid models of care (6). The second thematic article by Dr Tamonud and colleagues in this issue examines this promise in detail, discussing how tele-based addiction treatment models can be deployed, where they succeed, and where caution is warranted.

However, clinical suitability and technological feasibility alone are insufficient if the regulatory environment constrains how, where, and by whom addiction treatment can be delivered. Addiction treatment in India operates within a uniquely restrictive legal and regulatory framework. Many essential medications are governed by the Narcotic Drugs and Psychotropic Substances (NDPS) Act, which, while intended to prevent illicit use, also restricts availability and scale-up of evidence-based treatments. Similar caution is reflected in telemedicine and telepsychiatry guidelines, where even commonly used medications for alcohol withdrawal are tightly regulated for remote prescription. These regulatory constraints often negate the very advantages tele-care seeks to provide: timely initiation, decentralisation, and continuity of care. The third thematic article by Dr Darshan critically examines these legal and policy frameworks, highlighting how regulation shapes, and sometimes constrains, the delivery of addiction treatment in both physical and digital spaces.

The treatment gap cannot be closed without addressing the workforce gap. Here again, technology offers important possibilities. The COVID-19 pandemic normalised digital education across schools, universities, and professional societies, substantially reducing logistical and financial barriers. Medical professionals rapidly adapted to synchronous platforms for consultations and continuing medical education, while asynchronous platforms

enabled flexible, self-paced learning. In SUD as well, models such as Project ECHO have demonstrated the effectiveness of hub-and-spoke, case-based mentoring in building capacity among non-specialists. Indian experience with tele-ECHO programmes further demonstrates this potential, showing that community health providers, most without prior formal training in addiction medicine, were able to identify and engage patients earlier in the course of SUDs compared to tertiary addiction centres (7). Asynchronous learning through massive open online courses (MOOCs) and digital courses further complements this approach. Emerging evidence from India suggests that tele-based addiction training is feasible, acceptable, and capable of improving clinician confidence and skills (8). The first thematic article by Dr Udit explores these educational innovations, situating technology-enabled training as a pragmatic response to long-standing gaps in undergraduate and in-service addiction education. The efforts by NDDTC in developing and implementing an asynchronous digital platform for training of general practitioners in addiction treatment is also described as a separate box item.

This issue also features a special article marking the golden jubilee of the Monitoring the Future (MTF) survey, authored by Dr Yesh and colleagues, reflecting on five decades of substance use surveillance and its implications for prevention and policy. Our regular section updates continue to provide concise, focused insights on alcohol and tobacco, illicit substances, special populations, and recent advances, ensuring that readers remain informed across the breadth of contemporary addiction psychiatry.

While the pandemic accelerated digital adoption, enthusiasm has moderated over time. Empirical evidence reminds us why, in patients with SUD, teleconsultations have been associated with lower perceived empathy and weaker therapeutic alliance compared to in-person care, alongside concerns about access and privacy (8). These findings resonate with clinicians' lived experience of screen fatigue and the perceived loss of human warmth in purely digital interactions. Technology, therefore, is neither a panacea nor a replacement for in-person care. As articulated by Chakrabarti (2015), telepsychiatry is best conceptualised as an adjunct within hybrid models of care, enhancing reach and continuity while preserving the relational core of clinical practice (4).

India's addiction treatment gap is stark, measurable, and unacceptable, yet not intractable. Technology offers powerful tools to expand access, build capacity, and re-imagine care, particularly when aligned with training reform and regulatory rationalisation. As this issue illustrates, the challenge before us is not whether to adopt digital solutions, but how to integrate them thoughtfully, ethically, and humanely into addiction care. The future lies in balance; between reach and relationship, innovation and empathy, technology and trust.

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THEMATIC ARTICLES

Trainers Beyond Borders: Telemedicine for Capacity Building in Addiction Care

Udit Kumar Panda

The treatment gap in addiction services in India is staggeringly high. The National Mental Health Survey of 2015 reported a treatment gap of 86.3% for alcohol use disorders, 91.8% for tobacco use disorders and 73% for other drug use (1). More recent data from the National Survey on Extent and Pattern of Substance Use in India (2019) reveals that only about 2.6% of individuals with alcohol dependence and approximately 25% of those with illicit drug dependence have ever received any treatment, with inpatient treatment rates being even lower (2).

One of the reasons for this failure is the scarcity of trained professionals. Addiction psychiatrists are present as one per approximately 10 lakhs population, most of whom are predominantly concentrated in metropolitan cities (3). In Tier 2 and 3 cities as well as rural and tribal areas, specialized addiction services are practically non-existent. Traditional training models for addiction medicine in India have required trainees to reach limited number of academic centres offering structured fellowships. This is impractical for mid-career professionals and creates a geographical barrier for many.

Telemedicine has emerged as a transformative solution, not only for direct patient care, but also for capacity building. With the potential to neutralize geographic, institutional, as well as disciplinary boundaries, tele-training platforms have the potential to aid in democratizing specialized knowledge. In this article, we have examined how telemedicine is reshaping development of addiction workforce through various evidence-based models and explore the challenges in their implementation.

Breaking Traditional Training Barriers

Bottlenecks exist in traditional training methods in Addiction medicine. Practitioners often lack ongoing mentorship and peer consultation after their initial training. Telemedicine can change this through synchronous learning via live sessions which enables real time interaction with experts. Asynchronous modules allow self-paced learning accommodating busy clinical schedules for professionals. Hybrid models combine both approaches which offers higher engagement as well as flexibility.

A particularly valuable application is "Task-Shifting" which is training health workers of different cadres to deliver specific interventions which are appropriate to their skill level (4). Telemedicine enables simultaneous training of addiction specialists in advanced interventions, general physicians in screening and brief interventions, and ground level workers in harm reduction strategies. The larger implication of this shift is the emergence of "Tele-mentoring" as a distinct

discipline. This involves not only clinical supervision but also teaching soft communication skills required to build therapeutic alliance through a screen.

The ECHO Model: From New Mexico to NIMHANS

The Extension for Community Healthcare Outcomes (ECHO) model, which originated at the University of New Mexico is arguably the most impactful tele mentoring innovation. ECHO creates Knowledge Networks in which specialist hubs conduct regular teleclinics with care providers which combines didactic presentations and case-discussion based learning. Studies show that primary care providers who were trained through ECHO were able to get treatment outcomes comparable to specialists for hepatitis C and addictive disorders (5, 6).

NIMHANS, Bengaluru, pioneered ECHO implementation in India through its Virtual Knowledge Network (VKN) training over 10,000 healthcare providers including doctors, nurses and counsellors in addiction and mental health since 2014 (7). A study in Chhattisgarh demonstrated the effectiveness of this model. Counsellors from 11 rural and underserved districts connected to NIMHANS specialists via smartphone underwent weekly tele-ECHO clinics over 6 months. Results showed no dropouts, with half of the counsellors attending more than 80% of sessions. There was significant increase in knowledge and self-confidence and the counsellors reported high satisfaction with the model (8). The NIMHANS ECHO model has since expanded to Karnataka's 26 DMHP districts through funded programmes (9).

Complementary Training Approaches

Beyond ECHO, multiple complementary approaches have emerged globally. The National Institute of Drug Abuse (NIDA) in the USA offers online courses covering neurobiology to treatment in addiction (10). Yale University provides Massive Open Online Courses (MOOCs) in addiction medicine curriculum through various learning platforms. In India, the NIMHANS digital academy provides distance learning diplomas on mental health and addiction to various professionals. Societies like Indian Psychiatric Society conduct regular webinars on relevant topics in addiction psychiatry. Project ECHO has expanded to other institutes and has demonstrated effectiveness in increasing participant knowledge as well as patient access to healthcare in systematic reviews (11). NDDTC, AIIMS has also developed an asynchronous training module for training of doctors working in agencies supported by the Ministry of Social Justice and Empowerment, Government of India*.

**(Editorial Note: This is discussed in more detail in the next sub-article).*

Reaching Different Levels of the Workforce

The field of Addiction psychiatry is rapidly evolving. Even trained addiction psychiatrists require ongoing education to advance their training in novel therapies like digital therapeutics or depot preparations. For psychiatry residents with limited exposure to addiction psychiatry,

virtual access to specialists enriches their learning. Similarly training general practitioners in Screening and Brief Interventions for substance use disorders significantly improves detection and outcomes (12). Telemedicine also makes it feasible to train primary care physicians in basic addiction management which enables them to treat conditions like alcohol withdrawal or tobacco dependence.

Frontline workers like nurses, counsellors, ASHA workers can also be trained in a standardized manner regarding harm reduction, overdose prevention, psychoeducation and supportive counselling at scale. Various state level initiatives have demonstrated that virtual sessions can effectively reach participants across all districts while providing consistent training that would otherwise require a lot of time and resources when conducted face to face.

What Telemedicine Offers

Telemedicine neutralizes the geographical divides, allowing students access to mentors in different locations. The scalability of the training modules allows simultaneous training of hundreds of professionals, while recorded educational content can serve even more students. For example, a single well-designed module on management of alcohol withdrawal can be accessed by primary care physicians nationwide, standardizing best practices. Tele-mentoring is cost effective which is valid both from the student, mentor, and institutional perspectives. Flexibility in scheduling enables clinicians to learn during convenient hours and continuous engagement through WhatsApp groups or digital classrooms extend learning beyond discrete teaching sessions.

Ground Realities to be Addressed

Digital divide in India poses challenge for use of Telemedicine in capacity building. According to National Sample Survey Office data, only 24% rural households have access to internet as compared to 68% in urban areas (13). Approximately 70% of Indian population have poor or no connectivity to digital services (14). Digital literacy also shows a gender gap with men at 49% versus women at 25% internet usage (15).

Engagement as well as retention are challenging as well, even in well-designed programmes. Self-paced courses show dropout rates exceeding 50% in many cases. Assessing competency following tele-mentoring programmes poses additional difficulties, raising concerns about certificate validity. Online proctored examinations may partially address this issue. However, lack of standardization, variable content quality, and poor assessment formats raises broader concerns about quality of digital mentoring programmes.

Managing through these hurdles require multiple strategies. Engaging multimedia content available in multiple languages, building peer accountability into course design, establishing clear accreditation criteria and implementing robust practical assessment methods like virtual

OSCEs are some steps that can improve the quality of such programmes.

The Road Ahead

Progressive technological advances make the use of Telemedicine in capacity building for addiction particularly exciting. Personalized learning can be implemented with the use of Artificial Intelligence (AI)-driven platforms based on individual knowledge gap and learning style. Virtual reality technology can provide immersive skill training. Think of practicing motivational interviewing on a virtual patient that reacts differently to individual counselling style.

Collaborative models offer additional promise. Inter-institutional partnerships between medical colleges and centres of excellence can pool expertise and resources. International collaborations between countries that share similar challenges will allow exchange of knowledge, experience and best practices. For example, valuable lessons can be drawn from Matrix model implementation programme of Brazil or community-based addiction worker training from Thailand.

We should also think of policy changes that facilitate use of telemedicine for mentoring. Telemedicine Practice Guidelines (2020) have created an enabling environment for tele-training (16). Recognition of high quality tele-mentoring programmes by government bodies and professional societies will encourage mentors to maintain quality of such programmes. Investment in digital infrastructure will also require policy modifications.

Conclusion

Telemedicine represents a potential paradigm shift in addiction workforce training, offering an opportunity to address the massive treatment gap in India. Multiple proven models like Project ECHO's collaborative learning, MOOCs' massive reach can be adapted and expanded within the Indian context. The vision should be to ensure that every Indian suffering from an addictive disorder should have access to a trained and competent professional who can provide evidence-based care. Tele-mentoring can be of immense help in reach and scalability to achieve that vision. All stakeholders should embrace tele-training opportunities and advocate for quality programmes.

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NDDTC AIIMS Addiction Treatment Training (NAAT) Course

Ravindra Rao

It is well known that addiction treatment is not sufficiently covered in undergraduate medical curriculum. Hence, many doctors do not have sufficient knowledge and skills to manage patients with addictive disorders. Once they enter into practice, they do not have sufficient time to attend either physical training or participate in live training programmes. Hence, the need for asynchronous training programmes.

Asynchronous training programmes are self-paced online courses that offer a variety of flexibility for participants. The participants can log into the training course at the convenience of their time and place. The pace of the course is controlled by the participants based on their ability to concentrate and grasp the contents. They can revise a lesson as many times as needed. The self-paced course provides uniform standard of training as compared to offline training or synchronous online (for example, zoom-based) where the quality of training may differ. Asynchronous training programmes have become popular, especially those offered by reputed institutions.

NDDTC, AIIMS, has developed a self-paced, online training programme on management of substance use disorders. The training programme was developed with support from the Ministry of Social Justice and Empowerment (MoSJE), Government of India. The training programme has been successfully used for training doctors working in centres supported by MoSJE. The training programme is hosted on www.naat.co.in.

Some unique features of NAAT include:

- **Modular approach:** The online training course is divided into seven modules, with each module further divided into various lessons.
- **Delivery of content:** The modules deliver the course content in a rich, interactive audio-visual format. The modules use slides with text and graphics along with voice-overs for an interactive delivery of the contents. In some sessions, videos have been added to enhance the learning experience of the participants.
- **Self-evaluation:** Scope for self-evaluation has been provided in the course through questions placed within each lesson, at the end of each lesson, and at the end of each module, to help the participant refresh the important points covered during the course.
- **Mandatory scores for progression:** Participants have to attempt a mandatory set of multiple-choice-based questions before they proceed to the next module. Participants are provided opportunity to revisit the module and to attempt the evaluation again before proceeding to the next module if they score less than 70% in the module quiz.
- Certification on passing examination: The participants also undergo an online end-of-course examination prior to course completion. Candidates who successfully score more than 70% marks are granted a course completion certificate. Each lesson is expected to take about 30- 45 minutes to complete.
- Interaction with experts: Throughout the course, participants can interact with the experts and clarify their doubts through chat.
- Case discussions: Weekly live sessions for an hour are also conducted and different cases are discussed in the sessions.
- Short time for course completion: The participants can complete the training programme in 4 if they spend about 4 – 5 hours per week on the training.

More than 250 doctors have undergone training and have received certificates after completing the online training. These were spread across 26 states. About 70% of participants were MBBS-only doctors and only 30% had received training on addiction treatment earlier. Analysis of pre- and post-test results showed significant improvement in the test scores. The training programme was well received by the participants. These findings have encouraged our efforts to scale-up and increase the reach of the programme by making it available to wider audience.

Virtual Clinics, Real Recovery: Telemedicine in Addiction Care

Tamonud Modak

Over the past decade, telemedicine has expanded rapidly across healthcare, a trend accelerated by the COVID-19 pandemic. The pandemic demonstrated that high-quality addiction care can be delivered virtually without compromising safety or outcomes. The management of substance use disorders (SUDs) involve challenges such as stigma, limited specialist access, geographic barriers, and the need for continuous monitoring, factors that make SUDs particularly suited to virtual care. Virtual clinics help bridge these gaps by enabling remote screening, assessment, counselling, medication management, and relapse-prevention support. In India, where the treatment gap for SUDs remains substantial, virtual models offer a scalable extension to existing services.

Emerging Uses of Telemedicine in Addiction Care

Telemedicine now spans nearly every phase of SUD care, from screening to relapse prevention. Online assessments using tools like the ASSIST, AUDIT, and DAST have been adapted for virtual use and evidence shows that electronic screening combined with brief intervention and referral (e-SBIRT) can reduce substance use (1).

Tele-psychotherapy is now a core element of virtual addiction care. Remotely delivered cognitive behaviour therapy (CBT), motivational interviewing and similar psychotherapies have outcomes comparable to in-person therapy (2). In fact, Tele-psychotherapy often receives higher patient-satisfaction ratings, and mutual-help groups such as Alcoholics Anonymous and Narcotics Anonymous now run virtual meetings to maintain peer support (3).

Telemedicine has also strengthened follow-up care, a stage often marked by high dropout rates. Remote check-ins help clinicians monitor adherence, withdrawal symptoms, and comorbidities while offering timely intervention. New technologies, including wearables and digital phenotyping, allow early detection of behavioural changes, enabling faster intervention. A key advantage is immediate accessibility during moments of craving, potentially preventing relapse.
Digital relapse-prevention tools offer craving logs, ecological momentary assessments, geolocation alerts, and contingency management through electronic rewards. Telemedicine also supports family involvement by enabling caregivers to join sessions remotely. Many platforms provide micro-interventions such as brief coping videos, mindfulness prompts, and motivational messages for high-risk situations. Randomized trials of programs like reSET-O and A-CHESS show better adherence, fewer emergency visits, and longer periods of abstinence, underscoring how digital tools can effectively complement, and sometimes enhance, traditional relapse-prevention strategies (4).

Telemedicine in Medication-Assisted Treatment: Scope and Restrictions

Opioid substitution therapy (OST) is a central component of SUD treatment and has evolved significantly with telemedicine. The COVID-19 pandemic marked a turning point, prompting rapid regulatory changes and researchers have consecutively demonstrated that remote OST can be safe and effective. During the pandemic, many countries temporarily allowed remote initiation of buprenorphine, extended take-home methadone doses, and video-supervised dosing for stable patients. These measures reduced barriers such as travel difficulties, clinic crowding, and stigma. Evidence indicates that telemedicine does not increase medication diversion and may improve retention and reduce overdose risk (5). The success of these temporary policies has led several nations to consider making them permanent (6).

In India, however, tele-OST is governed by the Telemedicine Practice Guidelines (2020) which prohibit the remote initiation of controlled medications like buprenorphine and methadone (7). An in-person evaluation and physical examination remain mandatory. However, telemedicine is allowed for follow-up of stable OST patients- which by itself can significantly reduce barriers. Medications not covered by the NDPS Act, naltrexone, disulfiram, and nicotine replacement therapies, can be initiated and prescribed remotely, expanding virtual care options for alcohol and tobacco use disorders.

Despite restrictions, there is growing interest in cautiously expanding tele-OST in India. International experience shows remote initiation can be safe when paired with adequate safeguards such as video assessments, structured risk screening, linkage to OST centres, and electronic prescription monitoring. Given India's large treatment gap and limited number of addiction specialists, telemedicine could substantially broaden access to evidence-based Medication-Assisted Treatment (MAT) while maintaining patient safety. Although remote initiation of controlled medications is currently restricted, the wider potential for tele-OST in India is significant, shaped by emerging evidence, future policy reforms, and the needs of underserved regions.

Advantages for Patients and Challenges

Telemedicine has reshaped SUD treatment by expanding access while introducing its own share of challenges. Its greatest strength is improved reach. In India, where treatment gaps are wide and addiction treatment professionals are scarce, virtual clinics have the scope of helping people in rural and underserved regions connect with specialists. The Telepsychiatry Operational Guidelines (2020) notes that many areas are underserved by psychiatrists and emphasises the role of tele-medicine in reaching rural/remote populations (8). Telemedicine also offers flexibility, allowing patients to receive assessments, counselling, and follow-ups without disrupting daily routines, which enhances engagement and retention.

Another major benefit is reduced stigma. Individuals who may avoid visiting addiction

treatment centres, particularly women, adolescents, and professionals, can seek help discreetly. Digital tools such as craving logs, symptom trackers, and adherence diaries further support personalised, measurement-based care.

The expansion of virtual clinics is not without its challenges. Regulatory restrictions, especially around controlled substances, limit the expansion of virtual clinics. Technology barriers, including poor internet connectivity and low digital literacy, may hinder patients from using such services effectively. Clinical limitations also arise, as physical exams, withdrawal assessments, and urine drug screening are difficult to conduct remotely. Privacy and data security concerns add further complexity due to the sensitive nature of addiction-related information. Although many patients develop meaningful therapeutic relationships through video consultations, some clinicians worry that virtual encounters, especially audio-only sessions, may weaken rapport.

Therefore, although telemedicine offers significant promise by improving access, reducing stigma, and enabling flexible, data-informed care, there still remains the need to address regulatory, technological, clinical, and interpersonal barriers is essential to ensure that virtual clinics are safe, equitable, and effective.

Models from India and Abroad

In India, virtual clinics for addiction treatment have developed primarily to address the country's large treatment gap and to extend specialist care to remote regions. The National Institute of Mental Health and Neurosciences (NIMHANS) in Karnataka has been a prominent example, using telephone and video consultations for assessment, counselling, psychoeducation, and follow-up. During the COVID-19 pandemic, NIMHANS rapidly expanded virtual addiction clinics, delivering assessment, counselling, and follow-up through teleconsultations to maintain continuity of care despite mobility restrictions (9). Similarly, PGI implemented a structured tele-addiction model using video-based consultations, remote monitoring, and digital follow-up, enabling effective management of patients in rural and underserved regions while reducing treatment drop-out (10). NDDTC, AIIMS implemented its telemedicine assisted treatment for methadone maintenance treatment in one of its community clinics (11).

Internationally, similar developments have occurred. The United States has seen rapid expansion of tele-MOUD, with many states permitting full telehealth initiation and maintenance of buprenorphine. Digital therapeutics are now part of routine care, including the FDA-approved reSET-O platform, which pairs app-based CBT with medication. Canada's Virtual Opioid Dependence Program (VODP) combines remote physician care with local nursing support, allowing rural and Indigenous communities to access buprenorphine

initiation locally. Australia integrates digital mental health platforms, such as THISWAYUP, into national care pathways for alcohol and cannabis disorders, often supported by telehealth follow-ups. Likewise, the UK's NHS has expanded virtual pathways for alcohol use disorder through online assessments, remote psychosocial care, and app-based relapse-prevention tools. Together, these Indian and international experiences show that virtual clinics can provide effective addiction treatment across diverse settings. Successful models rely on structured workflows, clear triage pathways, and integrated digital tools that enhance engagement and continuity. For India, these examples demonstrate how telemedicine can expand safely and responsibly while balancing access with regulatory requirements. They underscore the importance of hybrid care, where virtual and in-person services complement each other throughout the recovery process.

Place in Existing Treatment Systems

Telemedicine is not meant to replace in-person addiction care but to strengthen it through a hybrid model. Most experts agree that virtual services work best when initial assessments, especially for high-risk or medically complex patients, are done in person, while follow-up consultations, psychotherapy, and monitoring occur remotely. This reduces the burden of frequent clinic visits and allows rapid virtual triage during crises, with in-person care available when needed. The value of this model increases when integrated with digital health systems that allow seamless sharing of electronic records and teleconsultation data.

In India, telemedicine plays a particularly important role because of the large treatment gap and uneven distribution of addiction specialists. Virtual platforms can connect district hospitals, primary care centres, and OST programs with tertiary experts, enabling specialist guidance in remote areas. Telemedicine also aligns with the Ayushman Bharat Digital Mission, which aims to create interoperable health records, national registries, and a unified telehealth network. Embedding tele-addiction services within this framework can improve continuity of care, enhance data sharing, and support scalable, coordinated treatment models. In this way, telemedicine becomes an essential component of modern addiction care, complementing traditional services while expanding access and strengthening India's digital health ecosystem.

Conclusion

Over the past decade, virtual clinics have shifted from a novelty to a crucial and sustainable part of addiction care. Their ability to overcome geographic, social, and system-level barriers makes them particularly valuable in India, where treatment gaps for substance use disorders remain wide. Evidence increasingly shows that virtual care is not only feasible but often superior in enhancing early intervention and improving treatment retention. A blended model appears most promising—one that combines telemedicine with in-person services and emerging digital therapeutics. For India, this will require stronger digital infrastructure, clear

privacy safeguards, standardized tele-MAT regulations, and training clinicians in virtual care. Integrating virtual clinics into national programs, including NACO's OST services, will further support continuity and scalability.

Ultimately, virtual clinics offer far more than convenience. They expand access to evidence-based treatment for those who need it most and are positioned to become a central pillar of addiction care as technology and policy continue to advance.

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On the Scales of Care: Balancing Policy, Law, and Ethics in Tele-Addiction

Darshan Shadakshari

In response to the growing utilisation of telemedicine and the need for clarity of regulation and practice during COVID-19 era, the Telemedicine Practice Guidelines (2020) [TMPG] were developed by the erstwhile Medical Council of India in collaboration with NITI Aayog, enabling Registered Medical Practitioners (RMP) to provide healthcare services through telemedicine (1). These guidelines were subsequently incorporated into the Code of Medical Ethics, formalising telemedicine as an accepted mode of clinical practice in India. Although the TMPG do not constitute statutory law, its incorporation into the professional code of ethics renders it binding on RMP, with potential disciplinary and medico-legal consequences in cases of non-compliance (2).

Legal Framework: Telemedicine and Telepsychiatry Guidelines 2020

TMPG provides a broad regulatory framework that supports the delivery of healthcare through telemedicine across medical disciplines and is generic in scope, offering definitions, discusses various modalities, including text-based consultation. It highlights consent and its importance, and focuses on identification and documentation. Of utmost importance is the prescription categories, which include List O/A/B/C. Table 1 summarises prescription drug categories and relevant addiction-related medications. TMPG additionally provides broad flow chart for initial and follow-up consultation and defines medications that can be prescribed in each of these consultations. It provides details of consultation for various stakeholder including the patients, caregiver, RMP, and healthcare workers.

In the context of care of individuals with addictive disorders, TMPG excludes prescribing narcotic and psychotropic substances regulated under the NDPS Act, thereby preventing the provision of opioid agonist therapy through telemedicine. Although there is mention of chronic conditions like diabetes and hypertension when describing List A and B, mental illness and addictive disorders, which also have chronic course, are excluded. Although subsequent amendment did include clonazepam, clobazam and phenobarbitals, these drugs are seldom used for addiction treatment. Following the initial amendment, there are no specific modifications related to addictive disorder.

The Telepsychiatry Operational Guidelines (2020) [TPOG] build upon the TMPG framework by operationalising telemedicine specifically for mental health care. It offers psychiatry-specific guidance on assessment, consent, capacity, prescribing, documentation, and management of high-risk situations. TPOG explicitly integrates telepsychiatry practice with the Mental Healthcare Act, 2017, addressing issues such as advance directives, nominated representatives, patient capacity, confidentiality, and access to medical records.

Table 1: *Medications relevant to treatment of Substance Use Disorders and telemedicine guidelines*

Category of Medicine	Medications
List O (Over-the-counter medicines)	Nicotine gum, nicotine patch, nicotine lozenge
List A (Relatively safe medicines; video consultation required for first prescription)	Clonazepam
List B	Naltrexone, acamprosate, disulfiram, baclofen, topiramate, bupropion, varenicline
List C / Prohibited medicines (NDPS Act, 1985 and Schedule X of Drugs and Cosmetics Act, 1940) Cannot be prescribed under via teleconsultation	Other Benzodiazepines (e.g., diazepam, lorazepam, clonazepam, chlordiazepoxide), methadone, buprenorphine, tramadol, methylphenidate, amphetamines

Substance use is incorporated as a mandatory domain of assessment, with routine documentation of alcohol and drug use, risk behaviours, and associated legal or safety concerns. Importantly, the guidelines delineate clear prescribing boundaries for addiction care, permitting tele-follow-up prescription of certain anti-craving and aversive agents, while explicitly prohibiting the online prescription of narcotic and psychotropic substances regulated under the NDPS Act, including opioid agonist therapies. There are safeguards such as the prohibition of asynchronous prescribing, discouragement of online dispensing, and defined thresholds for mandatory in-person referral in cases of intoxication, withdrawal, impaired capacity, or coercion which reflect an acknowledgment of the increased risks of misuse and diversion in addiction treatment.

Restrictive categorisation of medications and the blanket exclusion of substances regulated under the NDPS Act reflect an overly cautious interpretation that focuses on potential misuse with prohibition (3). Importantly, the NDPS Act explicitly permits the medical and scientific use of controlled substances and does not prevent their prescription by qualified medical practitioners. It can be argued that current telemedicine restrictions represent a regulatory overextension and fails to recognise addiction as a condition requiring sustained, evidence-based pharmacological treatment rather than episodic crisis management (3).

Ethical Dilemma in Telemedicine for Addiction Care

Ethical dilemma in telemedicine-based addiction care arise from the intersection of clinical vulnerability, controlled substance regulation, and digitally mediated healthcare delivery. At a general level, challenges include ensuring informed consent in the context of fluctuating capacity, balancing beneficence against the risks of under-assessment, risk of diversion and doctor shopping, safeguarding confidentiality and addressing inequities created by digital exclusion.

These ethical concerns are amplified in addiction care and are reflected particularly in difficulty in assessment of clinically significant signs such as withdrawal severity, intoxication, or physical complications of substance that use may be missed during teleconsultations. Decisions regarding medication initiation or dose optimisation, especially for opioid agonist therapy, may therefore be deferred, increasing the risk of harm. These limitations highlight an ethical tension between expanding access to care and ensuring adequate clinical evaluation (4). There are complex ethical dilemmas related to autonomy, coercion, and confidentiality in tele-addiction care. Efforts to enhance adherence such as supervised dosing of medications like disulfiram or naltrexone via telemedicine may improve outcomes but risk constraining patient autonomy. Similarly, outreach to patients who have disengaged from treatment may blur the boundary between beneficent follow-up and coercive intervention.

Privacy and confidentiality concerns are other major concerns in addiction care due to stigma and the involvement of digital intermediaries, shared devices, and data storage beyond clinician control. While the measures by TOPG prioritise patient safety, prevention of misuse, and professional integrity, they also constrain access to evidence-based treatments and continuity of care for some populations.

Policy Tensions: Access vs Misuse and Regulatory Gaps

The expansion of telemedicine has been widely promoted as a means of addressing long-standing gaps in access to addiction care, particularly in underserved, rural, and marginalised populations. By reducing geographical barriers, stigma associated with in-person attendance, and indirect costs of care, telemedicine offers the potential to improve early engagement, continuity of treatment, and follow-up for people with substance use disorders.

Despite this, there are persistent concerns regarding misuse, diversion, and regulatory oversight. Addiction care occupies a uniquely sensitive policy space, as it involves medications with abuse potential, patients with fluctuating capacity, and a high risk of commercial exploitation. Telemedicine platforms, particularly those operating through fragmented or private digital ecosystems, may inadvertently facilitate doctor-shopping, fragmented care, or inappropriate prescribing in the absence of robust verification, monitoring, and accountability mechanisms.

These risks have driven a deliberately conservative regulatory stance, reflected in strict prescribing restrictions, prohibition of asynchronous consultations, and exclusion of opioid agonist therapies from telemedicine-based initiation.

Although concerning, one should be aware that excessive regulatory conservatism in telemedicine-based addiction care may paradoxically increase harm. By limiting access to essential medications and constraining clinician discretion, restrictive guidelines risk precipitating treatment discontinuation, relapse, overdose, and increased engagement with illicit drug markets. Such policies may inadvertently reinforce stigma by implicitly framing patients with substance use disorders as inherently prone to misuse, rather than as individuals seeking legitimate medical care.

Ultimately, the policy challenge is not a binary choice between access and control, but the development of a regulatory architecture capable of enabling safe expansion. This requires moving beyond emergency-era caution toward proactive governance, including clearer prescribing pathways, platform-level regulation, interoperable data systems, and integration of telemedicine within national addiction treatment programs. Without such measures, telemedicine risks remaining either underutilised due to regulatory fear or overextended in ways that compromise patient safety and public trust.

Global Perspectives and International Lessons

International experiences with telemedicine in addiction care illustrate divergent regulatory approaches.

In the United States, telemedicine expansion during the COVID-19 pandemic was marked by temporary waivers to the Ryan Haight Act, enabling remote initiation of controlled substances, including buprenorphine, for opioid use disorder. While these measures improved access and treatment initiation, they also generated concerns regarding oversight, continuity of care, and the sustainability of emergency-era relaxations, prompting ongoing debate about permanent regulatory reform. This approach offers a critical lesson for low- and middle-income countries: that regulatory systems can balance risk mitigation with access expansion by embedding safeguards within service delivery rather than limiting telemedicine itself.

In contrast, the United Kingdom has adopted a more integrated and system-led approach, embedding digital addiction services within the National Health Service. Telemedicine is typically delivered as part of structured care pathways with clear referral mechanisms, multidisciplinary oversight, and linkage to in-person services. Australia offers an intermediate model, where telehealth services for addiction care are supported through public funding and national prescribing frameworks, alongside strong prescription monitoring systems. Telemedicine is positioned as a complement to existing services rather than a parallel

marketplace, with particular emphasis on clinician accountability and data integration.

Canada's national rapid guidance on telemedicine for substance use disorders adopts a pragmatic, patient-centred approach that explicitly integrates telehealth into standard addiction care pathways. Telemedicine is positioned not as an emergency substitute but as a legitimate modality for assessment, medication initiation, follow-up, and psychosocial interventions. The guidance emphasises continuity of care, flexible prescribing, and harm-reduction principles, recognising that rigid requirements for in-person assessments may disproportionately disadvantage rural, Indigenous, and marginalised populations. By embedding telemedicine within publicly funded addiction services, the Canadian model reframes access as an ethical and public health imperative rather than a regulatory exception.
The World Health Organization underscores the need for proportional regulation, advocating for digital health strategies that are rights-based, privacy-conscious, and embedded within broader health systems rather than platform-driven ecosystems. Across settings, a consistent lesson emerges: telemedicine in addiction care is most effective when accompanied by robust governance, integrated data systems, and clear clinical pathways.

For India, these international experiences highlight that neither unrestricted access nor excessive restriction is optimal. Instead, sustainable telemedicine-based addiction care requires moving beyond emergency permissions toward coherent, system-level integration that aligns clinical flexibility with regulatory safeguards.

Future Directions and Policy Recommendations

The future of telemedicine-based addiction care in India depends on moving from a predominantly risk-averse, emergency-driven regulatory posture toward a coherent and sustainable governance framework.

First step would be clearer and more nuanced prescribing rules and in place of blanket prohibitions, graded pathways could be developed for the initiation and continuation of evidence-based addiction treatments, including clearly defined eligibility criteria, mandatory video-based assessments, structured follow-up requirements, and linkage with in-person services where indicated.

Strengthening data protection and governance mechanisms is equally essential. Addiction-related health data are highly sensitive, and future policy must ensure robust safeguards around data storage, consent, access, and secondary use. Alignment of telemedicine practices with evolving national data protection frameworks, coupled with explicit accountability for digital platforms, would reduce reliance on individual clinician discretion and enhance public trust.

Integration of telemedicine into national addiction and mental health programmes represents another key direction. Telemedicine should function as a complementary component within publicly governed care pathways rather than as a parallel, market-driven service. Embedding tele-addiction services within existing national initiatives would facilitate standardisation, equity, and quality assurance, particularly in underserved regions.

Finally, ongoing evaluation and adaptive regulation with regular review of telemedicine policies, informed by clinical outcomes, misuse patterns, and patient experiences, can enable evidence-based refinement rather than static regulation.

Conclusion

Telemedicine in addiction care offers unprecedented access but raises unresolved legal, ethical, and regulatory challenges that require clearer updated evidence based prescribing norms, stronger data governance, and integration into national health systems.

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SPECIAL SECTION

Monitoring The Future Survey 1975-2025

Yesh Chandra Singh, Deepali Negi

The 'Monitoring the Future (MTF)' survey is a long-term research initiative by the University of Michigan in the USA. Funded by the National Institute on Drug Abuse since 1974, MTF completed its 50th year in 2024. It is an ongoing study of the behaviours, attitudes, and values of Americans from adolescence through adulthood. Each year, 8th, 10th and 12th-grade students are surveyed as part of the MTF Main Study (12th graders since 1975, and 8th and 10th graders since 1991). Additionally, adults aged 19 to 65 years are surveyed as part of the MTF Panel Study.

Methodology

The MTF Main Study sample is drawn from a national probability sample of students in 8th, 10th, and 12th grade across U.S while the MTF Panel sample is drawn from a national probability sample of students who participated in 12th grade at a modal age of 18.

The main study utilises an integrated design that combines annual cross-sectional surveys of secondary students with long-term longitudinal panel studies. The study currently employs a two-stage stratified random sampling procedure where schools are first selected from 70 grade-specific strata based on region, size, and urbanicity, followed by the selection of students within those schools. In 2024, the total sample size consisted of 24,257 students across 272 schools.

The panel study uses a multistage random sampling strategy and selects approximately 2,450 seniors annually, oversampling those with higher reported drug use to ensure representative data on substance use trends. In 2024, the study surveyed a total of 10,976 adults. Participants are surveyed every two years through age 30 and every five years thereafter, utilising a web-push methodology that encourages online completion while providing paper options for non-respondents. To maintain high engagement, the study employs rigorous follow-up efforts, including newsletters, incentive checks of $25, and reminders via email, text, and telephone.

MTF MAIN STUDY

Three major themes in adolescent drug trends from 1975-2024 have been identified.

Firstly, the study observed some of the largest single-year declines in past 12-month drug use ever recorded among adolescents during the COVID-19 pandemic. Among the ten most prevalent drug outcomes, record declines occurred for seven substances in both 12th and 8th grades and for nine in 10th grade. Lower-prevalence drugs were less likely to show record declines, partly due to their already minimal baseline usage. Importantly, these reductions have not only persisted but have often deepened: between 2021 and 2024, nine out of ten of the most commonly used drugs among 12th and 10th graders, and seven out of ten among 8th graders, continued to decline, extending the substantial decreases initiated at the pandemic's onset.

Sustained reductions indicate that delayed drug initiation during adolescence may lower lifetime substance use trajectories by preventing peer group integration and disrupting addiction-related biological processes. Drug abstention among students reached record highs in 2024, with significant increases across all grade levels since 2017: 12th grade rose to 67% (from 53%), 10th grade to 80% (from 69%), and 8th grade to 90% (from 87%).

Secondly, the "1990s drug relapse" represents a rapid, widespread increase in drug prevalence beginning in the early 1990s, following years of historical decline. The rapid increase in adolescent drug use was primarily caused by shifts in demand-side factors, notably a widespread decline in perceived risk of harm associated with drug use. This trend reflected "generational forgetting," where new cohorts had less exposure to the negative consequences of drugs, driving down perceived harm for substances like marijuana and LSD. Correspondingly, disapproval of drug use also declined sharply, further fuelling the surge in prevalence across adolescent cohorts. Although availability changed for some drugs, the decrease in perceived danger proved the more powerful factor explaining this reversal of the prior decade's decline. Current prevalence levels for most drugs now fall between the low nadirs of the early 1990s and the peaks achieved during the relapse period, with notable exceptions in some of the alcohol and tobacco use patterns.

Cohort effects constitute the third major theme, wherein substance use patterns established within an age cohort persist as that cohort ages through successive grade levels. Lower-grade trends frequently predict future patterns in higher grades, particularly during periods of rapid change, such as the early 1990s drug relapse onset, enabling prospective identification of emerging substance use epidemics.

With respect to individual substances, the annual prevalence of alcohol has experienced a substantial, sustained decline since its peak in 1978. Marijuana, following peaks in the late 1970s and a subsequent resurgence during the 1990s, has significantly declined toward historic lows. Cocaine surged to a peak in 1986 before plunging. Similarly, hallucinogens, unprescribed use of prescription sleeping and stimulant drugs, which were at peaks in the 70s and 80s, are currently near their all time lows. Heroin use, though consistently low, peaked during the 1990s relapse in 1997 and declined subsequently. Inhalant use also followed a similar trend. Unprescribed use of opioids peaked in 2004 and is currently nearest its all-time low.

Table 1: *Past 12-Month Prevalence in Class 12 Students*

Substance	Peak Prevalence (Year)	Lowest Prevalence (Year)	Prevalence in 2025
Alcohol	88.1% (1979)	41.1% (2025)	41.1%
Marijuana	50.8% (1979)	21.9% (1992)	25.7%
Cocaine	13.1% (1986)	0.6% (2023)	0.7%
Hallucinogens	11.2% (1975)	3.7% (2024)	4.3%
Heroin	1.5% (1997)	0.2% (2024)	0.9%
Inhalants	8.0% (1995)	1.1% (2020)	2.2%
Prescription Opioid drugs (not prescribed)	9.5% (2004)	1.0% (2021, 2023)	2.0%
Prescription Sleeping drugs (not prescribed)	10.7% (1975)	1.5% (2023)	4.7%
Prescription Stimulant drugs (not prescribed)	26% (1981)	2.1% (2023)	2.7%

MTF PANEL STUDY

The Panel Study categorises adults into three groups: Young Adults (19–30 years, trend data since 1988), Early Midlife Adults (35–50 years, since 2008), and Late Midlife Adults (55–65 years, since 2023). The panel study enables longitudinal analysis of substance use trajectories across the adult lifespan.

Young adults

Young adults demonstrated divergent substance use patterns, with cannabis-related products surging, while traditional substances declined sharply. Cannabis use increased substantially in 2024, with past-year use reaching 41.4%, slightly less than the historic high. Conversely, alcohol use reached historic lows across all measures. Cigarette smoking similarly established historic lows.

Nonmedical prescription drug use remained at historic lows. Hallucinogen use reached an all-time high, driven by hallucinogens other than LSD, while the use of LSD itself declined. Heroin use remained rare at 0.1%, while nonmedical opioid use reached a historic low of 0.5%, and fentanyl use at 0.2%. Sedative, tranquilizer and amphetamine use are currently near their historic lows.

Table 2: *12-Month Prevalence of Substances in Young Adults (1998 Onwards)*

Substance	Peak Prevalence (Year)	Lowest Prevalence (Year)	Prevalence in 2024
Alcohol	88.7% (1988)	80.7% (2024)	80.7%
Cannabis	43.6% (2022)	23.3% (1991)	41.4%
Cigarettes	37.9% (1998)	17.7% (2022, 2024)	17.7%
Any prescription drug (non-medical use)	15.6% (2013)	7.0% (2024)	7.0%
Hallucinogens/Psychedelics	3.3% (1989)	9.7% (2024)	9.7%
LSD	3.7% (1992)	0.8% (2004, 2005)	2.1%
Heroin	0.7% (2013)	0.1% (2023)	0.1%
Sedatives (Barbiturates)	4.6% (2008)	1.0% (2023)	1.2%
Tranquilizers	6.9% (2007)	2.0% (2024)	2.0%

Midlife adults

Cannabis use among early midlife adults showed substantial increases across all measures over the past decade: past-year use nearly doubled from 14.4% (2014) to 26.6% (2024) and daily use tripled from 3.0% (2014) to 8.2% (2024). Alcohol use among early midlife adults declined across all measures to new lows. No significant trends were observed among late midlife adults. Cigarette smoking among early midlife adults declined significantly over the decade. Nicotine vaping among early midlife adults significantly increased over five years to reach historic highs in 2024, with no significant changes among late midlife adults.

Hallucinogen use reached an all-time high more than an eightfold increase from 2014 among late midlife adults. Heroin use remained rare, while nonmedical opioid use (narcotics other than heroin) reached historic lows. Fentanyl use was rare. Amphetamine and cocaine use increased across both groups.

Among the ages 40 through 50 years, there has been a continued increase in the prevalence of cannabis use disorder, rising to 6.4% in 2024, whereas the prevalence of alcohol use disorder and other drug use disorder has been stable for the last few years.

Table 3:*12-Month Prevalence of Substances in Early Midlife Adults (2008 Onwards)*

Substance	Peak Prevalence (Year)	Lowest Prevalence (Year)	Prevalence in 2024
Alcohol	85.5% (2020)	81.4% (2008)	82.1%
Cannabis	29.2% (2023)	12.0% (2009)	26.6%
Cigarettes	24.7% (2008)	10.7% (2024)	10.7%
Any prescription drug (non-medical use)	10.2% (2015)	6.9% (2024)	6.9%
Hallucinogens/Psychedelics	5.3% (2024)	0.4% (2008)	5.3%
Heroin	0.3% (2013, 2014, 2019, 2021, 2022)	0.1% (2011, 2012)	0.2%
Sedatives (Barbiturates)	3.3% (2008)	1.7% (2024)	1.7%
Tranquilizers	4.3% (2014)	2.7% (2024)	2.7%
Amphetamine	3.2% (2022)	0.9% (2008, 2010)	2.9%
Cocaine	3.2% (2024)	1.8% (2012)	3.2%

Implications of the MTF study

The MTF study serves as a vital window into substance use behaviours among U.S. youth, providing scientifically reliable, nationally representative estimates of prevalence and historical trends since 1975. The study is instrumental in prevention and policy making by enabling early detection and localisation of emerging problems, thereby helping societal responses become less lagged. For instance, MTF provided early evidence of rising adolescent cigarette smoking in the early 1990s, which stimulated and supported major policy initiatives like the tobacco settlement between the industry and states, and more recently, MTF data informed the FDA's regulations on flavoring in vaping cartridges. The MTF emphasises that early prevention investments targeting ages 12-18 generate lifelong protective effects.

India's substance use surveillance landscape remains fragmented compared to longitudinal systems like the MTF study. India operated the Drug Abuse Monitoring System (DAMS), established in 2006, but was hampered by low compliance and captured exclusively treatment-seeking populations. Similarly, the National Survey on Extent and Pattern of Substance Use (2018-2019), a comprehensive one-time cross-sectional effort generated prevalence estimates but lacked the longitudinal repetition necessary for trend detection.

While individually informative, such surveys collectively fail to provide continuous, nationally representative monitoring required for analysing the age, cohort, and period effects in substance use trajectories.

India possesses both institutional precedence and infrastructure capacity to establish a surveillance system. A tailored system would generate trend data, identify generational differences in substance use propensity, track individual developmental trajectories from adolescence through mid-adulthood, quantify treatment gaps, and enable policy impact evaluation. However, a longitudinal survey like MTF can face distinct challenges. Given India's large population and linguistic, cultural, and geographical diversity, gaining consistent access to a representative sample of schools across numerous states and districts would be a daunting task requiring regular funding and a workforce.

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SECTION UPDATES

Microbiome makeover: Can Probiotics Aid in Management of Alcohol Use Disorder

Kamini Verma, Aniruddha Basu

Alcohol Use Disorder (AUD) remains a leading cause of global morbidity. In recent years the gut microbiome has moved from bench side curiosity to a therapeutic target in addiction research. Alcohol exert repeated insults on the gut. It alters microbial composition (dysbiosis), weakens the intestinal barrier (leaky gut), increases circulating endotoxin (lipopolysaccharide), and triggers systemic and neuro-inflammation , which can influence brain circuits that govern reward, stress and decision-making. There is a bidirectional communication between the gut microbiome and the brain, highlighting the role of microbiota-derived metabolites in neuroinflammation, neurotransmission, and mood effecting alcohol related outcome parameters. Theselinks have opened interest in microbiome-directed therapies such as probiotics and fecal-microbiota transplantation (FMT) as adjunctive treatments for AUD (1).

How might probiotics work in AUD?

The mechanisms underlying the benefits of probiotic supplementation in AUD are both attractive and biologically plausible. Probiotics are live micro-organisms that restores microbial balance, primarily by increasing protective genera such as Lactobacillus and Bifidobacterium. They strengthen intestinal tight junctions, reduce endotoxin translocation and systemic inflammation, modulate immune signalling, and attenuate neuroinflammation. Probiotics also influence neurotransmitter systems (including GABA, serotonin, and dopamine) via microbial metabolites such as short-chain fatty acids (SCFAs) and tryptophan derivatives. These metabolites act on the central nervous system by immune, vagal, and endocrine pathways. Collectively, these effects may reduce alcohol craving, blunt stress-induced relapse pathways, and improve mood and cognitive symptoms commonly observed in AUD. Notably, Lactobacillus supplementation has shown promise in mitigating liver injury, reducing heavy drinking, and alleviating co-occurring anxiety and depression in individuals with AUD and related conditions such as alcoholic liver disease (ALD), likely by modulating the gut-liver-brain axis (2).

Preclinical and Clinical Studies

Animal models provide strong proof-of-principle that gut microbiome contributes to alcohol related behaviours. Several rodent studies show that alcohol induces gut dysbiosis and microbial manipulations change alcohol-seeking behaviour. Notably, FMT experiments revealed that transferring microbiota from humans to alcohol-preferring mice could modify their drinking behaviour, supporting a causal gut-brain pathway. In rodents, probiotic supplementation has reduced ethanol intake, attenuated neuro-inflammation, and restored markers of synaptic function in reward-related brain regions, futher reinforcing this mechanistic link (3).

Human data are preliminary but promising. In a Phase-1 clinical study of adults with AUD, investigators reported that "FMT is safe and associated with short-term reduction in alcohol craving and consumption," along with favourable shifts in recipients' gut microbiota. Complementing these findings, a proof-of-concept, open-label pilot of daily probiotic supplementation in non-treatment-seeking heavy drinkers showed reductions in systemic immune-activation markers after 30 days of treatment, suggesting probiotics' impact on systemic inflammation linked to heavy alcohol use (4).

Together these human studies provide initial clinical proof that microbiome-directed interventions (FMT or probiotics) are feasible and biologically active in people with alcohol use or AUD, but larger, randomized, longer-term trials are needed to confirm effects on drinking outcomes, craving, mood, and liver health.

An Indian prospective observational study of 120 patients with alcohol dependence syndrome (ADS) at a tertiary hospital in Andhra Pradesh was done. Adjuvant probiotic therapy was evaluated for its impact on liver function and mood symptoms. At 1 month, the probiotic group showed significant reductions in total bilirubin, AST, and ALT compared to controls. By 3 months, both groups improved in anxiety and depression, but greater anxiety improvement was seen in the probiotic group (35 % vs 13.3 %, $p < 0.05$). These findings suggest that probiotic supplementation improves hepatic and psychological outcomes in ADS, warranting further controlled trials for causal confirmation. (2,4,5)

Trials of specific probiotic formulations

Small randomized and open-label studies have explored different probiotic strains and multi-strain preparations. Preparations containing Lactobacillus and Bifidobacterium have reported reductions in liver enzymes, inflammatory markers, and improvements in hangover symptoms or subjective wellbeing in small cohorts. A 2024 study of a fermented-food derived probiotic (Wilac L complex) observed decreased blood acetaldehyde and improved hangover symptoms, a hint that targeted microbes can alter alcohol metabolism and subjective effects, however should not be interpreted as treatment for AUD. Larger, well-controlled, multi-site randomized trials with clinically meaningful endpoints (e.g., percent days abstinent, heavy drinking days, relapse rates) are still missing (6,7).

Where FMT fits

FMT represents a more aggressive microbiome-directed intervention. Early human works (including randomized and phase-1 trials, suggests it can safely alter the gut microbial ecosystem and reduce alcohol craving and consumption in the short term. FMT studies also reveal that microbial changes can modulate host metabolites linked to reward and stress, reinforcing mechanistic plausibility. However, FMT is resource-intensive, carries regulatory

and donor-screening complexities, and long-term efficacy data for AUD are limited; hence it remains experimental outside of clinical trials (2).

Safety profile

Both FMT and probiotic supplementation have shown generally favourable safety profiles in clinical studies involving individuals with AUD. Reported adverse events are typically mild and transient, such as abdominal discomfort, bloating, or self-limited diarrhoea. Serious complications following FMT, including bacteremia and transmission of multidrug-resistant organisms, are rare but underscore the need for rigorous donor screening and standardized protocols (8). Probiotic use is widely considered safe in immunocompetent individuals; however, cases of Lactobacillus or Saccharomyces fungemia have been reported in immunocompromised or critically ill patients (9).

Overall, current evidence suggests that microbiome-based therapies are well-tolerated, but long-term safety data and pharmacovigilance remain essential as clinical applications expand (2,10).

Gaps in the research

Probiotics and microbiota studies in alcohol related disorders face notable methodological and clinical limitations that currently restrict their generalisability and therapeutic application. Study heterogeneity (different strains, doses, durations), small sample sizes, variable clinical endpoints, and short follow-up limit strong clinical recommendations. Not all probiotics are equal, effects are strain specific, and many commercial products lack rigorous trial evidence. Safety is generally good for probiotics in otherwise healthy people, but in severely immunocompromised or in AUD patients with advanced liver disease they can rarely cause bacteraemia, warranting careful monitoring. FMT requires careful donor screening because of risk of pathogen transmission. Finally, microbiome changes are only one piece of AUD's complex biopsychosocial puzzle; probiotics should be considered adjunctive to evidence-based psychosocial and pharmacologic treatments, not a replacement.

Research direction

The field needs adequately powered randomized controlled trials with clinically relevant endpoints such as abstinence and heavy drinking days. Standardization of probiotic strains, dosing, and treatment duration is essential, alongside mechanistic biomarker panels (metabolomics, immune profiling) to assess the response. Adaptive trials that combine probiotics with approved pharmacotherapies or psychotherapy could clarify whether microbial modulation enhances standard treatment responses. Regulatory advances around standardized microbial therapeutics, and the recent success of microbiome-derived products in other diseases will likely accelerate higher-quality AUD studies.

Conclusion

Probiotics and other microbiome interventions represent an exciting, biologically plausible adjunct in AUD care. Animal experiments, human data, and small clinical trials point to benefits for inflammation, liver function, craving and mood. Yet the field is early, clinical application should be cautious and evidence-driven. These can be a useful add-on in a multimodal recovery plan.

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Alcohol and Tobacco

Emerging pharmacological treatments for Alcohol Use Disorder: A 2025 Update

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Alcohol Use Disorder (AUD) remains a major global health challenge, marked by high relapse rates and limited pharmacological efficacy of current approved agents such as naltrexone, acamprosate, disulfiram, nalmefene (EMA) and Baclofen (France). These medications are only modestly effective and are under-utilized in treatment. As of 2018, the APA guidelines recommend acamprosate and naltrexone for the treatment of AUD and suggests gabapentin and topiramate for patients with the goal of reducing alcohol consumption or achieving abstinence, while disulfiram is suggested for achieving and maintaining abstinence only. Despite advances in behavioural interventions, there is a pressing need for medications targeting the neurobiological pathways of addiction. Recent years have seen a surge of investigational compounds, many repurposed from other indications. This update reviews major pharmacological advances, emphasizing their mechanisms, clinical evidence, and translational challenges.

GLP-1 Analogues: Semaglutide, Liraglutide, Tirzepatide, Exenatide

Originally developed for treating type 2 diabetes mellitus, glucagon-like peptide-1 (GLP-1) agonists act on brain reward and stress circuits in addition to metabolic pathways. This peptide is synthesised in the endocrine epithelial L cells, pancreatic alpha cells, and by a subset of neurons in the nucleus of the solitary tract (NTS) in the brainstem. GLP-1 has only one known receptor, GLP-1 receptor (GLP-1R), which is widely expressed throughout the body. Within the CNS, these receptors are predominantly expressed in brain regions involved in processing rewards, including the ventral tegmental area (VTA) and nucleus accumbens (NAc). Across 14 studies (4 RCTs, 10 observational) involving over 5.2 million participants, GLP-1 analogues (particularly semaglutide and liraglutide) were associated with a reduction in AUD severity, drinking days, craving, alcohol intake, risks of developing or relapsing into AUD, intoxication, and alcohol-related hospitalizations. Neuroimaging studies show reduced alcohol cue-reactivity, while weight loss and metabolic improvements may further support abstinence. These agents appear especially useful for patients with AUD and comorbid obesity or type 2 diabetes (1).

Tolcapone: COMT Inhibitor

AUD involves impaired control over drinking, partly linked to low cortical dopamine activity. Tolcapone, which boosts cortical dopamine, improved inhibitory control and reduced drinking in a small, randomized trial, with brain imaging showing enhanced activation of frontal control networks. This points toward a future precision-medicine approach, where genetically or biologically defined subgroups may benefit the most (2).

Pemvidutide: Investigational Agent

It is the first AUD drug to receive US FDA Fast Track designation. It is being tested in a phase-2 trial (RECLAIM) for reducing heavy drinking and improving biomarkers of alcohol intake, while also targeting obesity and Alcohol-Associated Liver Disease (ALD), an important step toward integrated metabolic-addiction treatment. The trial began enrolling in May 2025. It is a peptide-based 1:1 GLP-1/glucagon dual receptor agonist for the treatment of Metabolic Dysfunction-Associated Steatohepatitis (MASH), AUD, ALD and obesity. It is well tolerated in previous trials and has shown statistically significant reductions in non-invasive tests of fibrosis, weight loss, and liver fat content, and improvements in blood pressure (3).

Ibudilast: Phosphodiesterase & Neuroimmune Modulator

Ibudilast is an inhibitor of phosphodiesterases (PDE)-3, -4, -10, and -11 and macrophage migration inhibitory factor (MIF). It has been shown to dose-dependently suppress pro-inflammatory cytokines to increase the anti-inflammatory cytokine IL-10 and neurotrophic factors. The effects of ibudilast in treating AUD are thought to be driven by its anti-inflammatory and pro-neurotrophic qualities. Ibudilast has been shown to reduce tonic craving and improve mood responses to stress and alcohol cues in early human trials, particularly in patients with depressive symptoms (4).

Other drugs

Varenicline, a nicotinic acetylcholine receptor agonist (partial at $\alpha4\beta2$ and full at $\alpha7$), is primarily approved for nicotine dependence. In combination with naltrexone, it has been shown to reduce alcohol consumption more effectively than either drug alone (5). Across trials (up to 200 participants), results are mixed with some showing varenicline having modest efficacy in reducing heavy drinking, particularly among heavy-drinking smokers and those with less severe AUD. It appears more effective in men, is generally well tolerated, and may be a promising option for individuals co-using alcohol and nicotine (6,7). Other agents under investigation for AUD include mifepristone, aripiprazole, N-acetylcysteine, suvorexant, and ondansetron, while emerging preclinical candidates such as apremilast (PDE4 inhibitor), tideglusib (GSK-3β inhibitor), vasopressin V1B antagonists, ghrelin receptor antagonists, and cannabidiol show potential for future therapeutic development (8).

Conclusion

The evolving pharmacotherapy landscape for AUD reflects a shift from single-mechanism opioid antagonists and GABA receptor analogues towards a more nuanced targeting of metabolic, neuroimmune, adrenergic, and neuroplasticity pathways This broadening aligns more closely with patient profiles. For example, agents influencing metabolic regulation and reward responsivity, such as GLP-1 receptor agonists, may be particularly relevant for individuals with comorbid obesity, diabetes, or strong cue-reactivity. Medications acting on

stress-response and adrenergic systems may better address patients whose drinking is closely linked to anxiety, hyperarousal, or trauma-related states. Similarly, drugs influencing dopamine tone or nicotinic signalling may suit subgroups defined by genetic markers, smoking status, or lower-severity AUD.

A further theme is the growing emphasis on neuroimmune modulation and liver disease, where medications such as metadoxine (approved in Europe for acute and chronic alcohol intoxication) signal a move toward agents that not only reduce alcohol consumption but also improve survival and medical outcomes in advanced illness. Also, Pemvidutide is, to date, the only drug in AUD development to receive fast track designation and its trial is underway.

Together, these developments signal a future in which AUD pharmacotherapy is increasingly individualized rather than categorical. For routine clinical practice, this means selecting medications based not only on availability and tolerability, but also on the biological drivers of alcohol use, psychiatric and metabolic comorbidities, illness severity, and patient preference. Implementation should continue to prioritise combination with psychosocial interventions, close monitoring, and real-world outcome measurement. Ultimately, the expanding medication pipeline offers an opportunity to improve engagement, reduce harm, and move closer to personalised care in AUD.

Table 1. Novel Pharmacological agents for AUD

Pharmaco-logical treatment	Target receptor	Dose	Population	Evidence type	Outcome
Semaglutide (9)	GLP-1 receptor agonist	0.25mg, 0.5mg and 1 mg/week for week 1-4, 5-8 and week 9 respectively	N=48 (24 controls), non-treatment seeking adults aged 21-65 with AUD with 34 women	DBPCT	Fewer drinks per drinking day and lower weekly alcohol craving scores compared to placebo; fewer cigarettes smoked among concurrent smokers
Dulaglutide (10)	GLP-1 receptor agonist	1.5mg sub-cutaneous weekly for 12 weeks	N=151 (75 controls) adult smokers, predominantly obese (BMI>29.9), receiving varenicline + counselling	DBPCT	29% reduction in alcohol consumption vs placebo (RE = 0.71, 95%CI: 0.52-0.97, p=0.04)

Pharmaco-logical treatment	Target receptor	Dose	Population	Evidence type	Outcome
Exenatide (11)	GLP-1 receptor agonist	2mg sub-cutaneous weekly along + CBT	N=127 adults (with 65 controls); with >=5 heavy drinking days in past 30 days	DBPCT	Reduced alcohol cue–related activity (in ventral striatum/ septal region) and dopamine transporter availability; fewer heavy drinking days and lower total alcohol intake among people with BMI >30 kg/m²
Prazosin, Doxazocin (12)	α1-adrenergic antagonists	Prazosin (8-16mg), Doxazocin (16mg)	N=319; AUD ± PTSD; to augment naltrexone with cyproheptadine	Systematic review (7 RCTs)	Decreased alcohol consumption (SMD: -0.32); no effect on abstinence or heavy drinking days; may normalize stress-system dysregulations
Tolcapone (13)	COMT inhibitor; boosts cortical dopamine	Tolcapone (200 mg t.i.d.) for 8 days	N=90, non-treatment-seeking AUD individuals; prospectively genotyped (rs4680)	Randomized placebo-controlled trial	Reduced alcohol intake only in val/val genotype (higher COMT activity and lower dopamine tone); decreased right inferior frontal gyrus activation during cue-reactivity correlated with reduced drinking
Cypro-heptadine (14)	5-HT2 and histamine receptor antagonist	(CYP/P): low (8mg/5mg) and high (12/10mg) dose	N=154 severe AUD patients (54 in control, 54 low dose and 46 high dose group), treated for 3 months	DBPCT	Significant reduction in total alcohol intake; strongest effect in very high-risk drinkers (>100 g/day men; >60 g/day women)

Pharmaco-logical treatment	Target receptor	Dose	Population	Evidence type	Outcome
Metadoxine (15)	Enhances ethanol and acetaldehyde metabolism	PDN (40mg) or PTX (400mg) +/- MDX (500mg) TDS for 30 days	N=135 severe alcoholic hepatitis patients	Open label RCT	Higher abstinence rates; improved 3- and 6-month survival; relapse strongest predictor of mortality
Ibudilast (16)	Phosphordie sterases (PDE)-3/4/10/11 & MIF inhibition	Titrated to 50mg BID for 2-weeks	N=52 non-treatment-seeking individuals with AUD; placebo (n = 28)	DBPCT	45% reduction in odds of heavy drinking; attenuated ventral striatal cue-reactivity

**DBPCT = Double blind placebo-controlled randomized controlled trial, CYP/P = Cypro-heptadine + Prazosin, PDN=prednisolone, PTX=pentoxyphylline, MDX=metadoxime*

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From Craving to Cognitive Control: Reviewing the Therapeutic Potential of rTMS in Methamphetamine Dependence

Gaurav Kumar Singh

Methamphetamine use disorder (MUD) is associated with severe neurotoxicity, craving, and impaired decision-making. Despite advances in psychosocial interventions, both pharmacological and non-pharmacological treatments for MUD offer limited benefit (1). Increasing evidence across substance use disorders suggests that these clinical challenges are linked to dysfunction within prefrontal cortical circuits regulating impulse control, reward processing, and cue-reactivity. Non-invasive brain stimulation techniques, particularly repetitive transcranial magnetic stimulation (rTMS), have therefore emerged as promising therapeutic approaches aimed at modulating these dysregulated neural networks.

Meta-analyses of alcohol and tobacco studies involving rTMS has showed that rTMS produced meaningful reductions in substance use and craving, with medium to large effect sizes (Hedges' g > 0.5), especially in protocols employing multiple stimulation sessions targeting the left dorsolateral prefrontal cortex (DLPFC) (2). The DLPFC is a key hub in the cognitive executive network and plays a central role in regulating responses to drug-related cues and craving. Based on these rationale studies have started exploring role of rTMS in MUD with encouraging results, particularly in reducing cue-induced craving.

Wang and colleagues examined whether high-frequency (10-Hz) rTMS applied to the left DLPFC reduces craving and improves decision-making in individuals with MUD (3).

This randomised, single blind, sham-controlled trial recruited 68 admitted male patients of MUD (DSM-5) for more than a year, aged 20-50 years, with cumulative lifetime methamphetamine use of ≥ 50g, never received rTMS. Patients were randomized to receive either active 10-Hz rTMS (n=34) or sham stimulation (n=34). Individuals with major medical illnesses, infectious diseases, significant psychiatric disorders (including major psychosis), or concurrent treatments likely to confound outcomes were excluded.

rTMS was delivered using a figure-of-eight coil positioned over the left DLPFC. Active stimulation was administered at 10Hz, and delivered three times per week for four weeks (12 sessions). Each session consisted of a cumulative dose of 400 pulses at 100% of the individual motor threshold. Participants in the sham group underwent an identical procedure, with the coil oriented perpendicular to the scalp.

Outcome assessment focused on two clinically relevant domains: cue-induced craving and decision-making ability. Craving was evaluated using the visual analogue scale (VAS) following exposure to standardized methamphetamine-related visual cues, while decision-making was measured using the Iowa gambling task (IGT) across five blocks.

The average age of participants was 34.20 ± 6.49 years. Both groups were comparable in terms socio-demographic and methamphetamine use details.

At baseline, craving scores did not differ between groups (d=0.05, p>0.05). After the four-week intervention, participants in the 10-Hz rTMS group exhibited a significant reduction in cue-induced craving (F=11.46, p<0.01), whereas the sham group did not show any change (F=0.01, p>0.05). Post-treatment craving scores were significantly lower in the rTMS group than in the sham group (d= –0.54, p<0.05). Group comparison of change scores further demonstrated a significantly reduction in craving in the rTMS group than in the sham group (F=4.07, p<0.05).

Analysis of the IGT revealed no significant differences between groups across the five blocks at baseline (largest F=1.87, p>0.05). Following the intervention, significant between-group differences emerged in Block 4 (d=0.72, p<0.01) and Block 5 (d=0.88, p<0.01), with moderate to large effect sizes. Participants in the 10-Hz rTMS group made fewer disadvantageous choices. No significant differences were observed in Blocks 1-3 after treatment.

Analysis of ΔNet scores across blocks showed that the rTMS group demonstrated significantly greater improvement than the sham group in Block 2,4, and 5. No significant differences were noted in Blocks 1 or 3 (p > 0.05).

In this trial, high frequency rTMS over left DLPFC produced reduction in impulsivity and cue-induced craving among individuals with MUD. These findings are consistent with prior rTMS studies conducted in other SUDs.

The effects on decision-making were most evident in the later blocks of the Iowa Gambling Task, suggesting that rTMS may preferentially influence feedback-based learning and higher-order cognitive control processes rather than early exploratory decision-making.

The absence of significant between-group differences in the initial IGT blocks may reflect characteristics of the study population. Some participants exhibited methamphetamine-related psychotic symptoms at baseline, a clinical state associated with impaired task engagement and learning. Improvements emerging in later blocks may therefore indicate delayed consolidation of cognitive control as treatment progressed.

From a neurobiological perspective, stimulation of the left DLPFC is likely to influence fronto-striatal circuits implicated in impulse regulation and cue responsivity. Modulation of dopaminergic and glutamatergic signalling within these networks has been proposed as a mechanism through which rTMS exerts effects on craving and decision-making, although direct neurobiological measures were not assessed in this study.

A key limitation is the lack of follow-up assessment to determine whether observed improvements in craving and decision-making translated into sustained reductions in methamphetamine use or relapse risk. In addition, outcomes were limited to behavioral

measures, without accompanying neuroimaging or electrophysiological data to clarify underlying mechanisms.

This study demonstrated that high frequency rTMS was associated with reduction in both craving and impulsivity among individuals with MUD. However, a key limitation is that the study did not assess whether these improvements translated into long-term clinical outcomes or reductions in actual methamphetamine use. Despite this limitation, the findings are promising. Given the rising prevalence of methamphetamine use and the limited effectiveness of conventional treatment strategies, rTMS may serve as a valuable therapeutic option, if not as a standalone, at least as an augmentation to existing treatment approaches.

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Barriers and Bridges: Help-Seeking for alcohol and nicotine use among lesbian, bisexual, and queer (LBQ) women and non-binary persons

Shinjini Choudhury

Seeking treatment for substance use disorders remains challenging for LGBTQ (Lesbian, Gay, Bisexual, Transgender, Queer) individuals largely due to stigma and limited access to gender affirming care. Studies suggest that rates of substance use and substance use disorders are consistently higher in this population (1). Multiple factors likely contribute to this elevated use, including minority stress arising from prejudice, perceived stigma, internalized queerphobia, experiences of abuse and victimization, as well as co-occurring depression and risk of suicide (1,2). Data from the 2022 NSDUH (National Survey on Drug Use and Health) in the USA indicated that LBQ women had a twofold higher likelihood than heterosexual women to report heavy alcohol use in the previous month, and the pattern also held true for smoking in the previous month (3).

A recent qualitative longitudinal study in Australia examined the help seeking among LBQ (Lesbian, Bisexual, Queer) women and non-binary persons for alcohol and tobacco use, and explored the factors that influenced these behaviors (4). The participants were recruited through purposive self-selected sampling via social media and a pre-existing list of LGBTQ adults who had previously consented to be contacted for future research . There was a total of 60 study participants comprising of 41 cis women, 9 trans women, and 10 non-binary persons. While the study had a longitudinal design, where changes in the participants' alcohol and tobacco use was studied over time, help seeking related perceptions were not tracked longitudinally. The study used the following two theoretical frameworks, feminism and critical drug studies.

The study found that four themes emerged related to the patients' help seeking patterns for alcohol and tobacco use - awareness, agency, shame, and trust. Within each theme, there were various barriers and facilitators, which guided the help seeking process.

Awareness affected the approach for help in different ways. For some participants, awareness of the negative impact of their substance use often encouraged them to seek help, while a lack of awareness posed a significant barrier in making a change or seeking help. Differences in health literacy was another dimension intertwined with participants' awareness. For some individuals, their regular general practitioners or counsellors helped them recognize that their substance use was affecting their health and that seeking care was advisable.

Another theme identified was agency, which was expressed in the emphasis on autonomy and self-reliance. Patients wanted to be in control of the care seeking process as well, deciding whether and where to seek professional help and the degree of intervention as well. Peer support often played a crucial role in enabling agency during the help seeking process. Participants framed peer solidarity and queer support as an important measure to counter the paternalistic attitudes that they generally experienced in healthcare settings.

Shame was a central theme which emerged as a barrier to seeking help for their substance use. This shame was shaped by both consumption of substances, and by widely prevalent experiences of marginalization and trauma among LBQ women. These experiences possibly contributed to feelings of inadequacy of self, guilt, self-judgment and embarrassment, making help seeking a last resort. For some, recognizing that they were using substances as a coping strategy further intensified the shame.

The fourth theme was trust, which was key for the participants to ultimately engage in help seeking. Participants wanted to be able to trust that their healthcare providers were responsive, empathetic, and non-judgmental. Patients emphasized the need to trust that the service providers would not stigmatize, label, or shame them. Achieving this requires LGBTQ inclusive healthcare environments that fostered safety and promoted their identities, values and preferences.

In conclusion, this Australian study offers valuable insights into how the complex interplay between awareness, agency, shame and trust, shape help seeking among LBQ women and non-binary persons for alcohol and tobacco use. These findings align with broader global patterns, which suggest that structural stigma, limited LGBTQ sensitive services and history of marginalization, may all significantly influence treatment seeking for substance use in this population (5). In Indian settings, these themes are likely to be more pronounced, where LGBTQ persons frequently encounter stigma, discrimination, social invisibility, and limited access to non-judgmental, gender affirming health care. We need to develop and strengthen LGBTQ-inclusive addiction treatment services, and build peer-support frameworks that improve treatment uptake while promoting dignity, agency, and equity.

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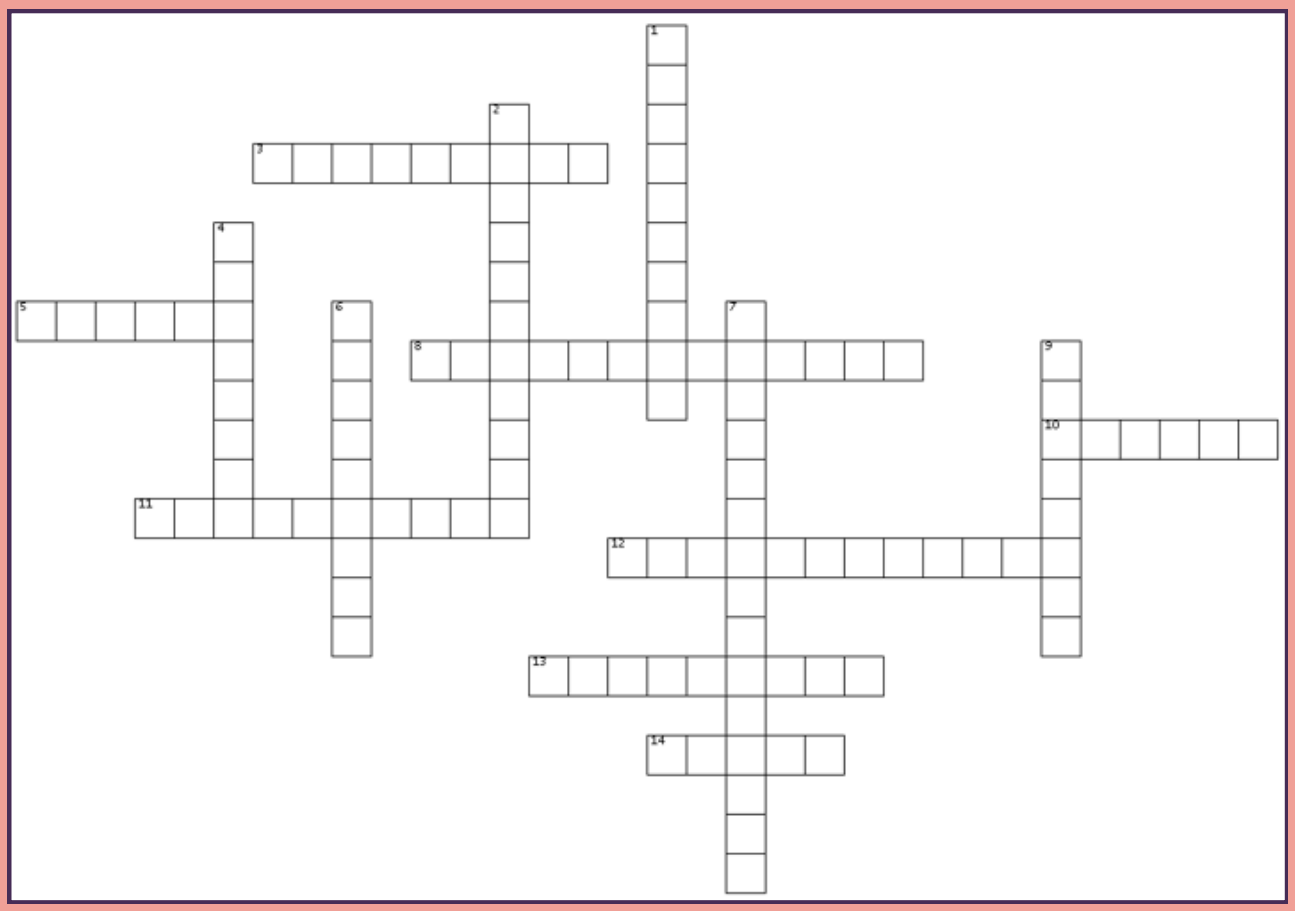
CREATIVE SECTION



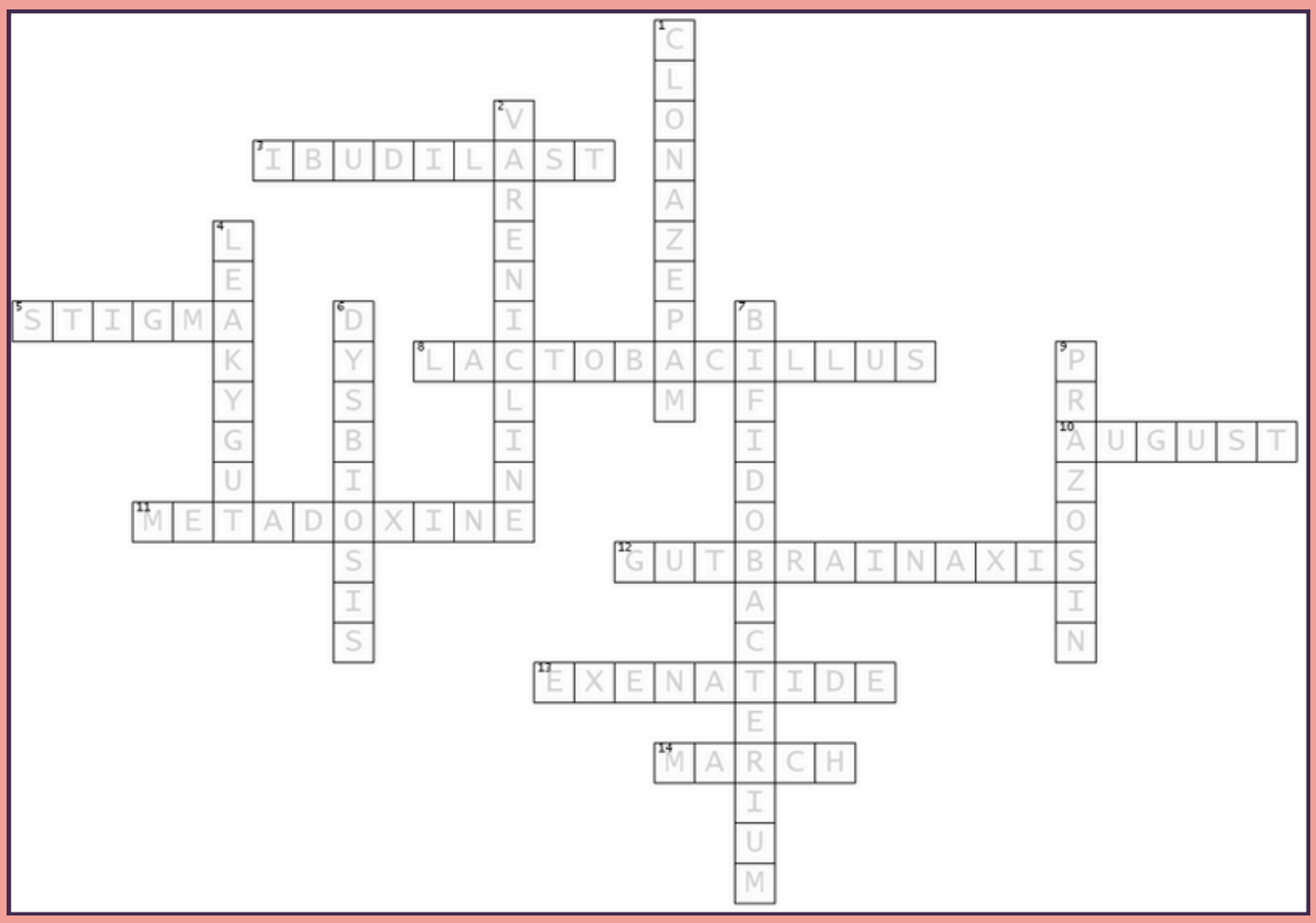
Down

1. Benzodiazepine allowed in a fresh telemedicine consultation
2. Nicotinic receptor drug with modest efficacy in heavy-drinking smokers
4. Impaired intestinal barrier associated with alcohol use
6. Alcohol-induced imbalance in gut microbial composition
7. Beneficial gut bacteria associated with improved gut health
9. Alpha-1 adrenergic blocker studied for reducing alcohol consumption

Across

3. Neuroimmune modulator shown to reduce craving and heavy drinking
5. Major structural barrier to treatment seeking in LGBTQ populations
8. Protective bacterial genus increased by probiotic supplementation
10. Month of year 2023 when India's Digital Personal Data Protection (DPDP) Act was enacted
11. Drug that accelerates alcohol metabolism and improves survival in alcoholic hepatitis
12. Bidirectional communication linking gut microbiota and brain function
13. Weekly injectable GLP-1 drug that altered alcohol cue reactivity on brain imaging
14. Release month of India's Telemedicine Practice Guidelines 2020

Solutions


1 CLONAZEPAM
2 VARENICLINE
3 IBUDILAST
4 LEAKYGUT
5 STIGMA
6 DYSBIOSIS
7 BIFIDOACIDOPHILUS
8 LACTOBACILLUS
9 PRAZOSIN
10 AUGUST
11 METADOXINE
12 GUTBRAINAXIS
13 EXENATIDE
14 MARCH

National Mid-Term CME 2026

When: 10th and 11th April, 2026

Where: Gangtok, Sikkim

Link: To be announced

57th ASAM Annual Conference

Organised by: American Society of Addiction Medicine

When: April 23 - 26, 2026

Where: Manchester Grand Hyatt, San Diego, CA

Link: https://www.asam.org/education/signature-courses/live-conference-events

CPDD 88th ANNUAL SCIENTIFIC MEETING

Organised by: The College on Problems of Drug Dependence (CPDD)

When: June 13 - 17, 2026

Where: Portland, OR

Link: https://cpdd.societyconference.com/v2/

ISAM, 2026

Organised by: International Society of Addiction Medicine (ISAM) & Vereniging voor Vreemdelingenverkeer, Netherlands

When: Oct 1-3, 2026

Where: Rotterdam, Netherlands

Link: https://hr25.hri.global/hr25-virtual/

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