JAT

Journal of Applied Therapeutics

Advancing Evidence, Practice, & Policy

Volume 1 | Issue 1 | July 2026

Institute of Applied Therapeutics (IAT), Chennai

Editorial Board

Journal of Applied Therapeutics (JAT)

Volume 1, Issue 1 (2026)

Table of Contents

EDITORIAL ARTICLE

Applied Therapeutics: Scope, Direction, and Relevance

Gauthamadas. U
Editor-in-Chief, Journal of Applied Therapeutics

The practice of medicine has always operated at the intersection of evidence, judgment, and context. Yet contemporary health care increasingly functions within fragmented disciplinary spaces, where scientific knowledge, policy, systems, and real-world implementation often evolve independently of one another. Over time, the increasing specialization of disciplines and the fragmentation of knowledge have created a gap between what is known and what is meaningfully applied in real-world settings.

The *Journal of Applied Therapeutics (JAT)* is conceived in response to this gap. The launch of a new journal is often accompanied by declarations of scope and academic intent. Behind such efforts, however, lies a more practical and necessary question: why should another journal exist at all?

Over the past several decades, health-care scholarship has expanded at an extraordinary pace. Never before has there been greater access to scientific literature, specialized knowledge, and technical expertise. At the same time, however, there has also been a growing fragmentation of discourse.

The objective of JAT is therefore not merely to add to the volume of available literature, but to create a structured platform where these intersections can be examined more meaningfully and applied more responsibly.

The word *Applied* in the title is deliberate. Applied therapeutics, as a working concept, is not confined to any single specialty. It represents the translation of scientific evidence into practical decision-making across clinical medicine, mental health, behavioural sciences, and allied health domains. It is concerned not only with what works under controlled conditions, but with what remains relevant, effective, and sustainable in the complexity of real-world practice.

Health care ultimately unfolds not within journals, conferences, or theoretical frameworks, but within the uncertainties of real-world practice in clinics, hospitals, communities, families, institutions, and systems that must function despite limitations, contradictions, and incomplete information.

Modern health-care problems increasingly resist narrow disciplinary ownership. The management of chronic disease, mental illness, suicide prevention, behavioural disorders, neurodevelopmental conditions, rehabilitation, public-health crises, substance use, violence, caregiver burden, and health inequities all require perspectives that extend beyond traditional boundaries.

In recent years, mental health has emerged as a critical area where this gap is particularly visible. Advances in neuroscience, psychopharmacology, and psychological interventions have significantly expanded our understanding. Yet translating this knowledge into consistent, context-sensitive care remains a challenge. The variability of patient environments, the influence of social and digital ecosystems, and the evolving nature of clinical presentations demand a more integrated and applied perspective.

At the same time, similar challenges exist across broader healthcare domains. Clinical decisions are increasingly influenced by factors that extend beyond traditional biomedical frameworks, including behavioural patterns, societal influences, policy environments, and systems of care delivery. The need for an interdisciplinary approach is therefore not optional, but necessary.

Applied therapeutics extends across clinical medicine, mental health, behavioural sciences, neuroscience, rehabilitation, public health, ethics, law, and allied domains. It emphasises relevance,

integration, and applicability within real-world systems.

JAT therefore seeks to position itself as an interdisciplinary, practice-oriented journal that encourages dialogue across medicine, psychiatry, psychology, neuroscience, public health, nursing, rehabilitation sciences, ethics, law, health policy, and allied fields. The intent is not to dilute disciplinary rigor, but to encourage intellectual integration where integration becomes necessary.

The journal places particular emphasis on work that engages with practical realities, translational research, clinically grounded observations, interdisciplinary perspectives, systems-level analyses, policy interfaces, ethical dilemmas, implementation challenges, and emerging models of care.

Importantly, the journal also recognizes that meaningful advances in health care often emerge from conversations that occur outside conventional academic structures. The challenge for applied scholarship is therefore not merely to report outcomes, but to examine processes, contexts, constraints, and mechanisms with sufficient clarity that others may learn from them.

The editorial framework of the journal is structured to support this objective. A clear distinction is maintained between editorial decision-making, operational workflow, and advisory input. This ensures that academic standards are upheld, processes remain consistent, and the journal evolves with appropriate guidance while avoiding unnecessary complexity.

No journal can function sustainably through academic authority alone, nor through operational efficiency alone. Scholarly publishing requires editorial judgment, methodological rigor, workflow discipline, reviewer engagement, ethical oversight, technical coordination, and institutional continuity. We remain deeply conscious that credibility is not declared at launch. It is earned gradually through consistency, transparency, editorial integrity, responsiveness to criticism, and sustained commitment to quality.

The inaugural issue represents the first step in this direction. It is intentionally modest in scale, focusing on establishing a clear structure and standard of publication. The aim is not to present volume, but to set a tone, one that values disciplined thinking, clinical relevance, and academic integrity.

Our aspiration is not merely to publish articles, but to foster thoughtful engagement across domains that too often remain isolated from one another despite addressing shared human problems.

As the journal develops, its strength will depend on the quality of contributions, the engagement of its reviewers and editorial members, and its ability to remain grounded in real-world applicability. If JAT can contribute even modestly toward that conversation, it will have justified its existence.

We welcome clinicians, researchers, educators, policy-makers, legal scholars, behavioural scientists, rehabilitation professionals, and allied health practitioners to participate in this evolving dialogue.

The Journal of Applied Therapeutics is therefore not defined by a single discipline, but by an approach, one that recognises that effective therapeutics must ultimately be judged not only by evidence, but by its application in the complexity of human contexts.

Address for correspondence: Dr. Gauthamadas. U
Editor-in-Chief, Journal of Applied Therapeutics
Email: journal@appliedtherapeutics,in

Submitted: 04.04.2026 **Accepted:** 18.04.2026

ORIGINAL ARTICLE

Understanding Disability and Rehabilitation Barriers Faced by Individuals with Head Injury

Archana. V[1] and Smitha Ruckmani. V[2]

[1] Chief Clinical Psychologist, Doc Gautham's Neuro Centre, Chennai, Tamil Nadu, India

[2] Associate Professor and Head, Department of Clinical Psychology, Institute of Mental Health, Chennai, Tamil Nadu, India

ABSTRACT

Background: Disability following head injury reflects a complex interaction between physical, cognitive, emotional, and social impairments that significantly affect an individual's ability to carry out daily activities. Individuals with acquired disabilities often experience greater psychosocial challenges compared to those with congenital conditions, particularly in adapting to altered roles and societal expectations.

Aim: The present study aimed to explore the nature and impact of disability, as well as the barriers to rehabilitation, among individuals with head injury from the perspective of caregivers.

Methods: A qualitative research design using a phenomenological approach was employed to understand lived experiences. A total of 15 caregivers were recruited through convenience sampling, and data were collected using semi-structured interviews. The data were analysed using thematic analysis, including horizontalization and clustering of meaning units into core themes.

Results: Four major themes emerged: self, reflecting loss of independence and emotional distress; family, indicating disruption, caregiver burden, and emotional strain; occupation, highlighting loss of vocational roles and cognitive challenges; and barriers to rehabilitation, including transportation difficulties, limited accessibility, and lack of awareness about available services. The findings suggest that head injury has a multidimensional impact extending beyond the individual to the family system, while structural and informational barriers continue to limit effective rehabilitation. The study underscores the need for improved rehabilitation accessibility, increased awareness, and family-inclusive intervention strategies.

Keywords: Head injury, Rehabilitation barriers, Phenomenology, Caregiver perspectives

Address for correspondence: Archana V

Chief Clinical Psychologist, Doc Gautham's Neuro Centre, Chennai

Email: archanaclinicalpsychologist@gmail.com

Submitted: 20.04.2026 **Accepted:** 04.05.2026

INTRODUCTION

Disability is an umbrella term covering impairments, activity limitations, and participation restrictions. An *impairment* refers to a condition of the body or mind; an *activity limitation* is a difficulty encountered by an individual in doing certain tasks or actions; while a *participation restriction* is a problem experienced by the individual in interacting with the world around them [2]. A *head injury* is any sort of injury to the brain, skull, or scalp, ranging from a mild bump or bruise to a traumatic brain injury. Common head injuries include concussions, skull fractures, and scalp wounds. Traditionally, classification of head injuries has been divided into two types: *open* and *closed injuries*. A closed head injury is produced by rapid acceleration followed by deceleration of the head, resulting in rapid linear or rotational movement of the brain against the hard, bony inner surface of the skull. The presence of coup and contrecoup injuries is typically found in closed head trauma. In cases of open head injury, the scalp is lacerated, and the skull is penetrated by an intruding object such as a bullet or projectile.

Acquired brain injury (ABI) is defined as damage to the brain occurring after birth. It can be *traumatic*, resulting from external forces such as motor vehicle crashes, sports injuries, or violence, or *non-traumatic*, arising from illness, infection, brain tumours, or stroke. ABI is considered a *catastrophic condition*, often resulting in a variety of challenges, including cognitive, physical, occupational, familial, social, and psychological difficulties. These resulting difficulties can create challenges that persist throughout a person's lifetime.

According to the World Health Organization (WHO), "*Rehabilitation* is the interventions needed when a person is experiencing limitations in everyday physical, mental and social functioning due to ageing or a health condition, including noncommunicable diseases or disorders, injuries or trauma." Disability is thus not just a health problem; it is a complex phenomenon that reflects the interaction between a person's bodily features and the society in which they live. Overcoming difficulties faced by people with disabilities requires interventions that remove environmental and social barriers. Disability is an important public health concern, especially in developing countries. Recent evidence suggests that specific cognitive deficits, such as impaired divided attention and persistent forgetfulness, may persist for years even after injury. In India, where the majority of individuals with disabilities reside in rural areas, a recent rural appraisal identified key barriers to effective rehabilitation service delivery, including limited awareness, inadequate workforce and infrastructure, poor accessibility and availability of assistive aids, low utilization of services, and concerns regarding their cost-effectiveness.[9]

In India, access to neurorehabilitation services is limited by several systemic barriers, particularly in rural areas where most persons with disabilities reside. Challenges include long travel distances, inadequate transportation, limited public awareness of available services, and a significant financial burden on families. A shortage of trained rehabilitation professionals, insufficient government funding, and weak policy integration further hinder the delivery and accessibility of neurorehabilitation within the national health system. [12] Although previous studies have examined disability following head injury and barriers to rehabilitation, most research has focused on quantitative outcomes, functional recovery, or service utilization. Limited research has explored how caregivers perceive the multidimensional impact of disability and rehabilitation barriers in the Indian context, particularly using a phenomenological approach. Understanding these lived experiences may provide insights for developing patient-centred rehabilitation services.

METHODOLOGY

Aim

The present study aims to understand the nature and impact of disability, as well as barriers to rehabilitation among individuals with head injury.

Objective of the Study

- To explore the nature of disability and its impact on various aspects of individuals' lives, including personal identity, daily functioning, and occupational roles.

- To understand the different obstacles encountered by individuals in the process of rehabilitation.

Research Design

A qualitative research design was employed, using a *phenomenological approach* (realistic phenomenology) to gain in-depth insight into participants lived experiences.

Sample Selection

The total sample for the present study comprised 15 caregivers of individuals who had sustained a head injury. Recruitment continued until thematic saturation was achieved, at which point no substantially new themes emerged from subsequent interviews.

Sampling Technique

Participants were selected using a convenience sampling method.

Statistical Analysis

Data were analysed using thematic analysis within a phenomenological framework.

Inclusion criteria

- Caregivers of individuals who had undergone a head injury.
- Both male and female with head injury.
- Individuals between the age group 22-60 years.
- Individuals hailing from both rural and urban areas.

Exclusion criteria

- Caregivers of individuals with other mental disorders or intellectual disabilities.
- Individuals with a head injury who were previously unemployed.
- Individuals below 22 years of age and above 60 years of age.

Procedure

Participants who met the inclusion and exclusion criteria were selected for the study. Informed consent was obtained from the participants. A semi-structured interview was conducted by the researcher, which lasted between 30 - 60 minutes and was conducted in Tamil and English in the following areas:

- Changes in family dynamics following a head injury,
- Changes in self-perception following a head injury,
- Changes in occupational roles or employment following a head injury.
- Reasons for discontinuation or non-utilization of rehabilitation services.

After data collection, *horizontalization* was used to extract significant statements. These statements were then organized into clusters of meaning, resulting in emergent themes in four domains: *family, self, occupation, and barriers to rehabilitation*. These themes are then reduced to an essential structure that explains the behaviour (how it was experienced), a structured description. The phenomenological research ends with the reader understanding better the essential, invariant structure (or essence) of the experience, recognizing that a single unifying meaning of the experience exists.

Ethical considerations

Ethical guidelines for qualitative research were strictly adhered to throughout the study. Participants were provided with detailed information about the research and gave informed consent before participation. They were assured of confidentiality, voluntary participation, the right to withdraw at any stage without consequences, and protection from any physical or psychological harm. Issues related to deception and debriefing were also addressed in accordance with established ethical research standards.

RESULTS AND DISCUSSION

The present study was informed by the International Classification of Functioning, Disability and Health (ICF), which conceptualizes disability as an interaction between health conditions, personal factors, and environmental barriers. The respondents' narratives are analysed in this chapter to acquire a feeling for their ideas in order to understand them fully; for each of the significant statements, the meanings are formulated. This process is repeated across participants' stories, and recurrent meaningful themes are clustered. The resulting themes are integrated into a textual description of the phenomenon studied. These themes are then reduced to an essential structure that explains the behaviour, a structured description (how it was experienced).

Table 1.1 Themes and Sub-themes

Major Theme	Subthemes	Description
Theme 1: Self- Loss of Independence and Emotional Impact	Loss of Independence	Dependence on others for activities of daily living and mobility after injury.
	Altered Self-Identity	Changes in self-perception due to reduced functioning and inability to perform previous roles.
	Emotional Distress	Feelings of sadness, frustration, helplessness, and emotional suffering resulting from disability.
Theme 2: Family- Disruption, Burden, and Emotional Strain	Caregiver Burden	Increased physical, emotional, and caregiving responsibilities placed on family members.
	Financial Strain	Economic challenges arising from treatment costs, unemployment, and reduced family income.
	Changes in Family Dynamics	Altered relationships, role shifts, conflicts, and disruptions within the family system.
Theme 3: Occupation- Loss of Role and Cognitive Challenges	Loss of Employment and Vocational Roles	Reduced ability to return to previous employment or perform occupational duties effectively.
	Cognitive Difficulties at Work	Memory problems, attention deficits, and slowed processing affecting job performance.
	Reduced Self-Worth and Productivity	Feelings of inadequacy and diminished confidence associated with occupational limitations.
Theme 4: Barriers to Rehabilitation- Lack of Access, Awareness, and Support	Transportation and Accessibility Barriers	Difficulties travelling to rehabilitation centres, especially among rural families.
	Lack of Awareness of Rehabilitation Services	Limited knowledge regarding available rehabilitation resources and treatment options.
	Financial and Resource Constraints	Costs of treatment, limited service availability, and inadequate support systems affect rehabilitation utilization.
	Family Motivation Despite Barriers	Strong willingness of caregivers to seek rehabilitation and support recovery despite practical difficulties.

Theme 1: Self – Loss of Independence and Emotional Impact

The self is an integral part of oneself. From interviewing the samples, it was found that one fourth of the individuals who were independent with respect to the activities of their daily living, following head injury, had become either completely or partially dependent with respect to the activities of their daily living. Existing literature also identifies that aggression and apathy are significant contributors to work-related disability in individuals with severe traumatic brain injury (TBI); these personality changes can be temporary or permanent.

Excerpts from participants' interviews are given below:

My brother, a bold, confident, and outgoing person who worked in NLC mines earlier, was the sole breadwinner of the family. Following RTA, he has become dependent on his wife for his ADL; he needs assistance to go anywhere and often cries when he sees how much we are struggling.

Theme 2: Family – Disruption, Burden, and Emotional Strain

Family is the single most important influence in an individual's life. They are a group of people who are directly linked through blood relations or institutions of marriage. It was evident that following a head injury, many families experienced chaos, conflict, and financial crisis. Many also found difficulties in handling responsibilities. They described the injured person as having a *short fuse*, *flying off the handle* easily, being irritable or having a quick temper. He/she might also use abusive language, throw objects, slam fists into things, slam doors, or threaten or hurt family members or others. All these factors also create stress on the family members, as well as it takes a toll on them both physically and emotionally.

Excerpts from participants' interviews are given below:

My son used to live in Chennai with his wife and two kids, while my wife and I stayed in our native village. After his accident, he lost his job, and we moved in to take care of him. Now we support his family with my pension. He is restless, lacks motivation, speaks in short sentences, and cannot travel anywhere alone... He seems to be restless with a lack of interest or motivation to do any work... He doesn't get along with his children like he used to, responds in short sentences when questioned, and is unable to travel alone anywhere.

Theme 3: Occupation – Loss of Role and Cognitive Challenges

Work provides individuals with meaning, self-respect, happiness, and the opportunity to build confidence, self-esteem, and a sense of contribution. It serves as the primary mode of living for most people around the world. Unemployment, therefore, can be deeply detrimental, depriving individuals of these essential elements. Interviews revealed that the majority of individuals with head injury were male, and among them, three-fourths had been the sole breadwinners of their families. In several cases, the injury had a significant impact on their occupational functioning. Despite their previous qualifications or professional roles, the chances of returning to work or securing new employment were markedly reduced. This often resulted in diminished self-confidence, lowered self-esteem, and feelings of inferiority. Additionally, many struggled to balance work and family life due to cognitive decline and newly assigned roles post-injury. A particularly prominent issue was difficulty sustaining attention at work, further impairing their occupational functioning.

Excerpts from participants' interviews are given below

My son, who had met with a road traffic accident last month, had completed his bachelor's in engineering, worked as a software engineer in an NLC for the past 2 years... but now he has difficulty in remembering things, which makes it difficult for him to take up any job ranging from small household chores to a job in any organization.

Another participant added:

My son works as an MTC bus conductor. Following his accident, he experiences slowness of movement because of which he is unable to make changes quickly and drops coins frequently at work...this has caused significant difficulty with regard to his occupation.

Cognitive impairments are a significant sequela of mTBI that can persist for an extended period of time

and impact the quality of life of individuals. Previous studies suggested that cognitive deficits may be due to structural damage to specific brain regions, and cognitive rehabilitation programs may be effective in improving cognitive outcomes[8].

Theme 4: Barriers in Rehabilitation - Lack of Access, Low Awareness, and Transportation

According to the World Health Organization (WHO), "*Rehabilitation* is the interventions needed when a person is experiencing limitations in everyday physical, mental and social functioning due to ageing or a health condition, including noncommunicable diseases or disorders, injuries or trauma." The goal of rehabilitation is to help the individual progress to the most independent level of functioning possible. The majority of the individual's caregivers were willing to spend to bring him/her back to his /her premorbid personality, irrespective of their socio-economic status. However, their main concern was transportation, because following the accident, individuals were in need of more assistance to travel from one place to another place, especially of those hailing from rural areas. Lack of awareness regarding the aids available is found to be predominant. However, on the brighter side, caretakers do not hesitate to involve people with head injuries in making important decisions.

Excerpts from participants' interviews are given below

My son has difficulties in remembering the names of objects and experiences, and slowness of movement. We have sent him for physiotherapy and yoga classes; however, we have stopped it because it was difficult for us to take him to the classes since it was distant from our house, and also, I'm 70 years old. But we do try our best to involve him in our family activities by taking him along with us for all, despite his not showing any interest in it.

Another participant added:

My son is only 24 years old we have come here to get few tests done so that we can claim insurance..a doctor here said that she can help my son to get back to adequate functioning level ..(When questioned whether she was aware about the rehabilitation processes earlier)..she replied saying that she wasn't aware of any such thing,..since she comes from a distant place it was enquired whether she will be able to bring her son from that far and despite hailing from distant place and low socio-economic status she was willing to come, just considering the betterment and future of her son.

The findings were consistent with previous literature. Research states that the main barrier to the utilization of services was distance from rehabilitation units and lack of financial coverage/assistance for rehabilitation by healthcare insurance providers[13]. Most studies indicate that the greatest recovery from head injury occurs within the first year following the injury. However, measurable recovery also has been shown to continue well beyond the one-year marker. In addition to actual brain recovery, improvements in functioning may result from rehabilitation and learned coping and compensatory strategies.

CONCLUSION

The present study concluded that there was a significant impact on the various aspects of the lives of individuals with head injury, ranging from mild impairment to severe impairment. Especially significant impacts were found to be greater on the area of self and almost equal on the areas of family and occupation. However, the notable positive finding was that family members were willing to provide support to help them return to their adequate level of functioning, irrespective of socioeconomic background or geographical location. The findings highlight disability following head injury as a multidimensional phenomenon affecting identity, family functioning, occupational participation, and access to rehabilitation. Environmental barriers, particularly transportation challenges and limited awareness of services, continue to impede rehabilitation participation despite strong caregiver motivation.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

- Provide Psychoeducation to the individual as well as the family members.
- Implement intensive therapy including Speech-Language Pathologists, Physical Therapists,

Occupational Therapists, Psychologists and Neuropsychologists.
- Introduce structured cognitive retraining programs.
- Promote home-based rehabilitation.
- Facilitate environmental modifications to support recovery and independence.
- Encourage inclusion of individuals in family activities.
- Offer a vocational skills program tailored to the individual's current abilities.

Limitations

The study was conducted with a limited number of participants; this restricts the generalizability of the findings to wider populations.

Future implications

For future practice and research, the following considerations are suggested:

- Individuals expressing willingness to engage in therapy can be encouraged to participate in cognitive retraining, group therapy, and home-based rehabilitation interventions.
- Pre- and post-intervention assessments should be conducted to evaluate the effectiveness of therapeutic programs.
- Family members should receive psychoeducation regarding the nature of the condition, the availability of rehabilitation resources, the benefits of psychotherapy, and their rights under the Rights of Persons with Disabilities (RPWD) Act.

Suggestions for Future Research

- Incorporate Longitudinal Design:

A longitudinal study could track individuals with head injury over time to better understand how rehabilitation barriers and perceived disability evolve during different stages of recovery.

- Mixed Methods Approach:

Combining qualitative data with quantitative measures could enrich the findings and offer a more comprehensive view of the challenges faced.

DECLARATIONS

Conflict of Interest

The authors declare no conflict of interest related to this manuscript.

Funding

No external funding was received.

Ethical Statement

No patient-identifiable information is included.

REFERENCES

1. Balan AB, Walz R, Diaz AP, Schwarzbold ML. Return to work after severe traumatic brain injury: Further investigation of the role of personality changes. Braz J Psychiatry. 2021;43(3):340-341. doi:10.1590/1516-4446-2020-1660.
2. Centers for Disease Control and Prevention. Disability and health overview [Internet]. U.S. Department of Health & Human Services; 2025 Apr 2 [cited 2025 May 13]. Available from: https://www.cdc.gov/disability-and-health/about/index.html
3. Disabled World. Definitions of disability [Internet]. Disabled World; [cited 2026 May 13]. Available from: https://www.disabled-world.com/definitions/disability-definitions.php
4. Hadar-Frumer M, Napel HT, Yuste-Sánchez MJ, Rodríguez-Costa I. The International Classification of Functioning, Disability and Health: Accuracy in aquatic activities reports among children with developmental delay. Children (Basel). 2023;10(5):908. doi:10.3390/children10050908.
5. Healthline. Head injury [Internet]. Healthline Media; [cited 2026 May 13]. Available from: https://www.healthline.com/health/head-injury
6. HeadInjury.com. Rehab cognitive [Internet]. HeadInjury.com; [cited 2026 May 13]. Available from: http://www.headinjury.com/rehabcognitive.html
7. Johns Hopkins Medicine. Head injury [Internet]. 2025 Feb 7 [cited 2026 May 13]. Available from: https://www.hopkinsmedicine.org/health/conditions-and-diseases/head-injury
8. Mavroudis I, Ciobica A, Bejenariu AC, Dobrin RP, Apostu M, Dobrin I, et al. Cognitive impairment following mild traumatic brain injury (mTBI): A review. Medicina (Kaunas). 2024;60(3):380. doi:10.3390/medicina60030380.

9. Mullerpatan R, Waingankar P, Parab S, Agarwal B, Nagrale O, Dalvi S. Pilot implementation of rural rehabilitation services, India. Bull World Health Organ. 2022;100(11):662-668. doi:10.2471/BLT.22.288168.
10. Ontario Neurotrauma Foundation. Acquired brain injury programs [Internet]. Ontario Neurotrauma Foundation; [cited 2026 May 13]. Available from: http://onf.org/our-programs/acquired-brain-injury
11. Reed-Guy L. Head injury [Internet]. Healthline. 2025 Jul 1 [cited 2026 May 13]. Available from: https://www.healthline.com/health/head-injury
12. Saluja A, Dhamija RK. Prioritizing neuro-rehabilitation services in low- and middle-income countries. Ann Indian Acad Neurol. 2022;25(4):579-582. doi:10.4103/aian.aian_499_22.
13. Vooturi S, Yada P, Kaul S. Barriers for utilization of institutional rehabilitation services by stroke patients in a developing country. Neurology. 2020;94(15 Suppl):4080. doi:10.1212/WNL.94.15_supplement.4080.
14. World Health Organization. Rehabilitation in the context of WHO's mandate. Bull World Health Organ. 2022;100(11):654. doi:10.2471/BLT.22.020122.

ORIGINAL ARTICLE

An Integrated Neurobehavioral Outpatient Mental Health Care Pathway to Improve Treatment Acceptance: An Observational Practice Model

Dharya Easwar[1] and Pritika E [2]

[1] Bachelor of Arts (Hons.) in Sociology, Economics, and Psychology, Christ University, India

[2] Clinical Psychologist; Doc Gautham's Neuro Centre, Chennai, India

ABSTRACT

Background: Mental disorders are a major contributor to disability worldwide, yet many individuals delay treatment, discontinue care early, or fail to receive adequate continuity of care. Several factors that could lead to treatment failure are stigmatization, fear of receiving a psychiatric label, family refusal, behavioral avoidance, financial insecurity, and barriers to follow-ups. While prior literature on the topic includes studies on the collaborative care approach, experiences of patients, and measurement-based care approaches, less is known about the implementation of how these components are operationally integrated within routine outpatient psychiatric practice.

Aim: The present paper describes a single-site interdisciplinary observational report on an integrated neurobehavioral outpatient mental health treatment program designed to improve treatment acceptance using integrated clinical, behavioral, social, and operational procedures.

Methods: The program consisted of structured initial communication, transparent bundled pricing, psychometric assessments, circuit-based psychoeducation, early review processes, integrating psychotherapy into treatment, maintenance via tele-follow-up and logistics of psychotropic medications, and multidisciplinary collaboration.

Results: Observations from daily practice suggested improved participation in structured assessment pathways, strong referral patterns through existing patient networks, positive feedback from patients and caregivers, and continued utilization despite transparent pricing structures.

Keywords: Outpatient Psychiatry, Treatment Engagement, Integrated Care

Address for correspondence: Pritika E
Clinical Psychologist, Doc Gautham's Neuro Centre, Chennai
Email: pritikaclinicalpsychologist@gmail.com

Submitted: 26.04.2026 **Accepted:** 10.05.2026

INTRODUCTION

Mental illnesses are a major contributor to disability, occupational impairment, family burden, and reduced quality of life worldwide. Despite the availability of evidence-based pharmacological and psychological interventions, a substantial proportion of individuals experiencing mental health difficulties either delay seeking treatment, discontinue care prematurely, or fail to maintain long-term engagement with services.[25] As a result, treatment gaps remain a major public health concern across both developed and developing countries. The consequences of untreated or inadequately treated mental illness extend beyond symptom persistence and may include reduced educational attainment, impaired occupational functioning, strained interpersonal relationships, increased healthcare utilization, and diminished overall well-being.

A wide variety of factors contribute to the treatment gap. Previous literature has identified stigma, family resistance, uncertainty regarding psychiatric medications, discouragement from prior treatment experiences, denial of illness, financial concerns, and practical barriers to accessing services as common obstacles to help-seeking and treatment continuation.[22] Qualitative research has further demonstrated that treatment engagement is influenced by family dynamics, psychological avoidance, concerns regarding legitimacy of illness, time constraints, and perceptions of available services.[11] Importantly, these barriers rarely occur independently. Individuals seeking mental healthcare often encounter multiple barriers simultaneously, creating a cumulative burden that may discourage initiation of treatment or contribute to early dropout.

Within routine psychiatric practice, additional challenges are frequently observed. These may include fear of psychometric assessment, uncertainty regarding treatment costs, concerns regarding psychiatric labels, reluctance to initiate psychotherapy, travel burden associated with repeated visits, and withdrawal from follow-up after partial symptom improvement. While each of these barriers may appear relatively minor in isolation, their combined effect can substantially reduce treatment participation. Consequently, improving engagement may require interventions that address not only clinical symptoms but also the broader psychological, social, and operational factors that influence patient behaviour throughout the treatment process.

Several service models have attempted to improve treatment engagement through different mechanisms. Patient-centred approaches emphasize communication, therapeutic relationships, and responsiveness to patient needs and have been associated with improved satisfaction and participation.[2] Collaborative care models have demonstrated benefits in enhancing access, improving coordination among providers, and supporting continuity of care.[26] Similarly, measurement-based care approaches have been shown to improve symptom monitoring and facilitate timely treatment modification through structured feedback processes.[8] Although these approaches have independently demonstrated value, they are often implemented as separate strategies. Reviews of integrated healthcare models have highlighted a relative lack of implementation-focused literature describing how such principles may be operationalized together within routine clinical practice.[27]

An additional consideration involves how psychiatric symptoms are explained to patients and families. Psychoeducation has long been recognized as an important component of mental healthcare because explanatory models influence perceptions of illness, treatment acceptance, and adherence. In many settings, individuals continue to interpret psychiatric symptoms through frameworks involving personal weakness, character flaws, or family failure. Such interpretations may contribute to stigma, self-blame, and reluctance to engage with treatment. To address these concerns, the present model incorporates circuit-based psychoeducation, which conceptualizes emotional and behavioural symptoms as disruptions in interconnected neurobehavioral systems involved in regulation, threat processing, motivation, attention, and self-control. By providing a simplified neurobehavioral explanation of symptoms, the approach seeks to reduce self-blame, normalize mental health difficulties, and increase readiness for treatment participation.

The present paper describes an observational report of a specialist outpatient mental health service model that integrates clinical, behavioural, social, and operational processes into a structured care pathway designed to improve treatment acceptance and continuity. Rather than focusing on a single intervention, the pathway was developed to address multiple barriers across different stages of care through coordinated service design. The objective of this report is to describe the components of the pathway, the rationale underlying its development, and routine practice observations related to treatment engagement and continuity.

METHODOLOGY

Design

This paper presents an observational descriptive report of a real-world service model from a specialist outpatient clinic. The report describes an integrated care pathway that was intentionally structured to address commonly observed barriers to psychiatric treatment participation through targeted service processes.

This pathway encompasses a clearly defined first-contact communications process to mitigate anxiety and confusion regarding the first contact appointment; a clear bundled fee structure to remove ambiguity from cost; and a psychometric evaluation with an explanation of results for diagnosing clarity. To further alleviate anxiety towards psychiatric medications, early feedback cycles were incorporated into the patient's circuit-based psychoeducation. Continuity systems, including teleconsultation and medication logistical support, were utilized to decrease the follow-up burden and maintain engagement of patients over time. Resistance to psychotherapy was addressed by providing phased and structured treatment packages. Finally, perceptions of neglect were mitigated through coordination in staff interaction.

This report describes the purpose of developing operational processes around barriers to participation of people in psychiatric treatment, as well as routine service indicators that are related to treatment acceptance and continuity. As an observational descriptive report, it does not include experimentation or patient-identifying information.

Setting

Implementation took place in a psychiatric-led specialist mental health outpatient clinic based in an urban South Indian setting, aided by professionally trained clinical psychologists, administration, and operations staff.

Under supervision, as part of training exposure, the lead author had opportunities to observe case conferences involving multidisciplinary clinical review, where clinical psychologists presented cases, psychometric findings, therapeutic progress, and other management challenges.

CARE PATHWAY DESIGN AND BARRIER REDUCTION LOGIC

Structured Exploratory First Contact

Initial enquiries are addressed through a guided exploratory call process. The usual elements comprise clarification of symptoms and concerns, fee structure, expected timelines, and reassurance about the process. The barrier effect at the social level includes normalizing consultation. At the psychological level, anxiety reduction and at the economic level, lowering uncertainty regarding expenditure.

Transparent Bundled Initial Pathway

The first engagement consists of a specialist consultation, brief counselling/orientation, and development of a treatment plan. Barrier effects include providing social legitimacy and credibility of the care pathway provider, reducing fear of “nothing happening” psychologically, and decreasing the economic transaction costs by providing predictable bundled pricing.

Therapeutic Environment Design

The environmental features include climate-controlled waiting rooms with educational media, supportive staff, and refreshments upon request. These features enhance the legitimacy of the psychiatric care socially and reduce distress and perceived neglect psychologically.

Staged Psychometric Assessment

Where indicated, psychometric assessment occurs across structured sessions over several days, followed by explanatory feedback. Barrier effects

include reframing mental illness as assessable and understandable socially, improving insight and confidence psychologically and reducing perceived burden through segmented sessions economically.

Circuit-Based Psychoeducation

After an assessment, a simplified explanation of emotional and behavioral problems using a circuit-based framework is conducted. The focus is on using the framework to understand symptoms as problems in the brain's interconnected systems instead of as personal flaws. Patients and their families are educated about how hyperactivity or hypoactivity in a circuit system that controls regulatory, threat, motivational, and attentional systems can cause common mental health problems. This model is used to reduce guilt and family shame, normalize mental health challenges, and improve patient willingness to engage in therapy. By presenting symptoms as understandable and modifiable patterns of functioning, the approach aims to increase treatment acceptance.

Early Review Cycle

Patients are typically reviewed in the first week since the start of treatments. Some barrier effects include reinforcing patients psychologically in their vulnerable period, reassuring families socially of active case monitoring, and saving money on prolonged ineffective treatment due to timely modification.

Psychotherapy Integration

When required, psychotherapy is recommended in phased packages. This structure improves predictability and frames therapy as an integral part of treatment.

Continuity Systems

As patients stabilize, continuity systems, consisting of tele-consultation, digital payment, and organized medical dispatch, are utilized. Barrier effects include reducing travel and opportunity costs at the economic level, maintaining engagement after improvements in symptoms and at the psychological level, and finally supporting discreet treatment when stigma is present socially.

Daily Multidisciplinary Review Conference

Routine multidisciplinary review meetings are conducted, comprising the lead psychiatrist, clinical psychologists, and relevant clinical staff. During these meetings, active cases, psychometric findings, therapy processes, treatment barriers, and complex cases requiring clarification and reformulation are discussed. Such meetings enable supervision and consistency in clinical decision-making.

RESULTS

Routine practice observations have revealed improved participation in assessments, strong patient-referral networks, positive feedback from patients and caregivers and acceptance of premium specialist pricing and services.

Firstly, looking into assessment participation, a higher psychometric uptake was observed. Earlier participation was estimated at approximately 50%–60% and often required active persuasion. In more recent periods, uptake increased to approximately 90%, with patients more readily consenting to evaluation.

Secondly, there was evidence of a strong referral network; new patients indicated they learned about the service through social networks.

Thirdly, positive feedback was frequently reported, with patients and caregivers citing clarity, responsiveness, and perceived improvement.

Fourthly, patients continued to access services despite premium pricing because they perceived that the quality of care justified the cost.

Finally, there was high acceptance of remote continuity pathways (e.g., tele-follow-up) and increased engagement among established patients through continuity pathways.

Discussion

The present observational practice model suggests that treatment participation in outpatient psychiatry may be better understood as a multidimensional behavioural process rather than a purely clinical event. In routine psychiatric practice, barriers to engagement rarely occur in isolation and frequently involve a combination of stigma, fear of psychiatric medications, uncertainty regarding treatment costs, reluctance toward psychometric assessment, travel burden, and withdrawal from follow-up after partial symptom improvement. Consequently, the current pathway was developed with the assumption that treatment participation is influenced not only by symptom severity but also by psychological, social, and operational factors. Structured communication

before consultation, transparent pricing, explanatory assessment feedback, early review cycles, continuity systems, psychotherapy integration, and multidisciplinary collaboration were therefore incorporated with the aim of reducing barriers across different stages of care. Circuit-based psychoeducation further sought to normalize psychiatric symptoms and reduce self-blame, thereby improving readiness to participate in treatment.

Observations from routine clinical practice revealed increased participation in psychometric assessments, positive feedback from patients and caregivers, strong referral patterns, sustained engagement through continuity systems, and continued utilization of services despite transparent premium pricing. Although causal conclusions cannot be drawn from the present observational design, these findings suggest that barriers to treatment participation may be modifiable through service-level interventions. Rather than viewing treatment engagement solely as a consequence of symptom improvement or patient motivation, the present observations support the possibility that the manner in which care is organized and delivered may itself influence treatment acceptance and continuity. This interpretation may be particularly relevant in psychiatric settings, where stigma, uncertainty, and concerns regarding long-term treatment frequently contribute to disengagement.

Some aspects of the present framework resemble measurement-based care (MBC). Measurement-based care emphasizes the systematic use of symptom monitoring and clinical feedback to facilitate timely modifications in treatment [14]. Previous studies have demonstrated that MBC improves identification of treatment non-response, enhances quality of care, and promotes patient engagement through collaborative review of symptoms[14,15]. However, implementation challenges, including workflow limitations and response burden, have also been described [15]. In the present pathway, psychometric assessment and early review cycles were incorporated into routine clinical workflows rather than being implemented as separate activities. Consequently, measurement became integrated into the overall treatment process instead of functioning as an isolated exercise. Such integration may facilitate greater acceptance of psychometric evaluation and reduce resistance toward follow-up among individuals who are initially apprehensive about psychiatric assessment.

The pathway also demonstrates similarities with collaborative care and integrated behavioural health approaches. Coordination among psychiatrists, clinical psychologists, therapists, and administrative staff reflects a team-based approach to service delivery. Similarly, staged treatment planning and continuity mechanisms parallel features commonly observed in integrated behavioural health models [8]. Previous literature has shown that collaborative approaches can improve access to care and strengthen coordination among providers [26]. Nevertheless, most collaborative care models have traditionally been implemented within primary care settings and larger healthcare organizations. In contrast, the present model evolved within a specialist outpatient psychiatric setting and was designed specifically around barriers commonly encountered in routine practice. This flexibility enabled the integration of clinical, behavioural, and operational processes into a single framework to promote continuity and long-term participation.

An additional and relatively distinctive feature of the present pathway was the incorporation of circuit-based psychoeducation during assessment feedback and treatment planning. Psychoeducation has been shown to improve understanding of illness, reduce misconceptions, facilitate adherence, and enhance reintegration into everyday functioning [21]. Furthermore, psychoeducation may promote treatment-seeking by helping individuals perceive their difficulties as manifestations of a treatable condition rather than as evidence of personal weakness [22]. In the current model, emotional and behavioural symptoms were explained through a neurobehavioural framework that posits interconnected systems responsible for regulation, threat processing, motivation, attention, and self-control. Such explanations were intended to reduce guilt, family shame, and stigma while increasing understanding of symptoms. Although formal outcome measures were not employed, circuit-based explanations appeared to provide patients and caregivers with a framework through which

symptoms could be viewed as understandable and modifiable rather than as personal failings. This may be particularly relevant in sociocultural contexts where stigma and self-blame continue to influence help-seeking behaviour.

Certain aspects of the pathway also resemble boutique or concierge psychiatry services. Features such as extended consultations, continuity of care, individualized follow-up, and increased accessibility have been associated with higher patient satisfaction and engagement, although evidence regarding their effect on long-term mental health outcomes remains limited. However, the current model extends beyond conventional concierge approaches. In addition to providing accessibility and continuity, it incorporates psychometric staging, circuit-based psychoeducation, structured review cycles, and multidisciplinary collaboration. Thus, the emphasis of the pathway is not merely on convenience or personalization but on the deliberate design of behavioural and operational processes intended to facilitate sustained treatment participation.

An important implication emerging from the present model is that treatment engagement may be conceptualized as a dynamic process influenced by multiple interacting factors rather than as a single decision to seek care. Previous studies have identified stigma, accessibility barriers, financial concerns, family attitudes, and uncertainty regarding treatment as important determinants of mental healthcare utilization [2,22,25]. However, these barriers often coexist and interact within routine practice. Concerns regarding medications may occur alongside financial uncertainty and fear of social judgment, whereas symptom improvement itself may paradoxically contribute to premature discontinuation of follow-up. Consequently, treatment participation may be influenced not only by clinical symptoms but also by the broader social and operational environment within which care is delivered. The present pathway was therefore developed around the assumption that barriers should be addressed across multiple stages of care rather than exclusively through clinical interventions.

The findings may have particular relevance within the Indian context, where substantial treatment gaps continue to exist despite increasing awareness regarding mental disorders. Inadequate availability of services, unequal distribution of resources, stigma, and difficulties in maintaining continuity of care have all been recognized as important contributors to poor treatment coverage. Improvement in mental healthcare utilization requires attention not only to the availability of services but also to factors influencing treatment acceptance and continuation. In this regard, the present pathway illustrates one example of how operational and behavioural strategies may be integrated within routine outpatient psychiatric practice to improve engagement and continuity.

The principal contribution of this report lies not in demonstrating efficacy but in describing how clinical, psychological, social, and operational elements can be integrated into a coherent service model aimed at reducing barriers to participation. Administrative procedures are often regarded as separate from clinical care; however, the present observations suggest that communication processes, continuity mechanisms, psychometric feedback, and multidisciplinary coordination may themselves function as therapeutic facilitators. Although the findings remain exploratory and should be interpreted cautiously, the observed patterns of assessment participation, referral behaviour, continuity engagement, and positive feedback are broadly consistent with reduced barriers to treatment participation. The model may therefore be conceptualized as a behaviourally informed therapeutic ecosystem in which clinical interventions are supported by social and operational architecture. Further prospective studies are required to determine the effectiveness, scalability, and generalizability of such integrated outpatient mental health service models.

Limitations

There are several factors to consider when interpreting this report. Firstly, it is based on one outpatient mental health setting and cannot be generalized to other settings, such as public primary care settings and lower-resource practices. Secondly, the study utilized a descriptive observational design and did not engage in comparison with a control group or another comparable practice. It also did not

engage in systematic outcome tracking or objective patient outcome measures. Thus, causal conclusions between the integrated care pathway and observed patterns of treatment participation cannot be drawn. Thirdly, because the report indicators were estimated by observations in the normal course of service delivery without a standardized approach for measurement and auditing, the chance of observer bias is to not be ruled out. Finally, the model was implemented within a specific operational context that included dedicated staffing, workflow flexibility and service infrastructure, which may affect scalability in settings with fewer resources.

Future Directions

Future research should formally evaluate whether integrated outpatient mental health service models improve treatment participation and continuity outcomes using prospective designs. Since the current study emphasizes operational and logistical redesign, future research can specifically delve into engagement-based outcomes looking into the rates of treatment initiation, assessment uptake, early dropout and consistency in follow-up. Comparative studies with other standard consultation outpatient models can help clarify whether structured service integration plays a role in improving engagement patterns. Further, qualitative studies involving patients and caregivers will provide greater depth in understanding how communication, financial transparency, and continuity systems influence treatment acceptance.

Conclusion

This report suggests that treatment participation in outpatient psychiatry may be influenced not only by clinical interventions but also by how care systems are designed and delivered. This integrated pathway was designed to overcome stigma-induced barriers and promote engagement and continuity by means of clinical, psychological, and operational integration.

Although findings remain exploratory, it is clear that communications networks, circuit-based psychoeducation, continuity structures, and multidisciplinary collaboration can all play the role of facilitators of treatment engagement. In the context of mental health facilities characterized by a high prevalence of delayed care and early dropout, the architecture of services can be regarded as an important yet overlooked determinant of treatment outcome. Further prospective research is needed to evaluate the effectiveness and scalability of such models.

DECLARATIONS

Conflict of Interest

The authors declare no conflict of interest related to this manuscript.

Funding

No external funding was received.

Ethical Statement

No patient-identifiable information is included. This paper describes an observational service model only.

Acknowledgements

The authors acknowledge the contributions of the counselling, administrative, and operational teams involved in the implementation of structured patient-care processes.

REFERENCES

1. Andrade LH, Alonso J, Mneimneh Z, Wells JE, Al-Hamzawi A, Borges G, et al. Barriers to mental health treatment: results from the WHO World Mental Health surveys. Psychol Med. 2014;44(6):1303-1317.
2. Beach MC, Inui T; Relationship-Centered Care Research Network. Relationship-centered care: a constructive reframing. J Gen Intern Med. 2006;21 Suppl 1. doi:10.1111/j.1525-1497.2006.00302.x.
3. Bhattacharjee D, Rai AK, Singh NK, Kumar P, Munda SK, Das B. Psychoeducation: a measure to strengthen psychiatric treatment. Delhi Psychiatry J. 2011;14(1):33-39.
4. Charles C, Gafni A, Whelan T. Shared decision-making in the medical encounter: what does it mean? (or a model of shared decision-making). Soc Sci Med. 1997;44(5):681-692. doi:10.1016/S0277-9536(96)00221-3.
5. Deen TL, Fortney JC, Pyne JM. Relationship between satisfaction, patient-centered care, adherence and outcomes among patients in a collaborative care trial for depression. Adm

Policy Ment Health Ment Health Serv Res. 2011;38(5):345-355.
6. Elwyn G, Frosch D, Thomson R, Joseph-Williams N, Lloyd A, Kinnersley P, et al. Shared decision making: a model for clinical practice. J Gen Intern Med. 2012;27(10):1361-1367. doi:10.1007/s11606-012-2077-6.
7. Epstein RM, Street RL Jr. The values and value of patient-centered care. Ann Fam Med. 2011;9(2):100-103. doi:10.1370/afm.1239.
8. Fortney JC, Unützer J, Wrenn G, Pyne JM, Smith GR, Schoenbaum M, et al. A tipping point for measurement-based care. Psychiatr Serv. 2017;68(2):179-188. doi:10.1176/appi.ps.201500439.
9. Gaboury I, Lapierre LM, Boon H, Moher D. Interprofessional collaboration within integrative healthcare clinics through the lens of the relationship-centered care model. J Interprof Care. 2011;25(2):124-130.
10. Goodrich DE, Kilbourne AM, Nord KM, et al. Mental health collaborative care and its role in primary care settings. Curr Psychiatry Rep. 2013;15:383. doi:10.1007/s11920-013-0383-2.
11. Lamb J, Bower P, Rogers A, Dowrick C, Gask L. Access to mental health in primary care: a qualitative meta-synthesis of evidence from the experience of people from “hard to reach” groups. Qual Health Res. 2012;22(1):135-145. doi:10.1177/1049732311421736.
12. Lewis CC, Boyd M, Puspitasari A, Navarro E, Howard J, Kassab H, et al. Implementing measurement-based care in behavioral health: a review. JAMA Psychiatry. 2019;76(3):324-335.
13. Luxford K, Safran DG, Delbanco T. Promoting patient-centered care: a qualitative study of facilitators and barriers in healthcare organizations with a reputation for improving the patient experience. Int J Qual Health Care. 2011;23(5):510-515. doi:10.1093/intqhc/mzr024.
14. McCay E, Cleverley K, Danaher A, Mudachi N. Collaborative partnerships: bridging the knowledge practice gap in client-centred care in mental health. J Ment Health Train Educ Pract. 2015;10(1):51-60.
15. Mead N, Bower P. Patient-centredness: a conceptual framework and review of the empirical literature. Soc Sci Med. 2000;51(7):1087-1110.
16. Moothedan E, Katoju SV, Nguyen OT, Faldu A, Motwani K, Feller DB. Patient-level factors associated with referral rates to mental health services in a network of student-run free clinics: a pooled cross-sectional study. J Stud Run Clin. 2024;10(1).
17. Moudatsou M, Stavropoulou A, Philalithis A, Koukouli S. The role of empathy in health and social care professionals. Healthcare (Basel). 2020;8(1):26. doi:10.3390/healthcare8010026.
18. Oliveira CT, Dias ACG. How can psychoeducation help in the treatment of mental disorders? Estud Psicol (Campinas). 2023;40.
19. Patel V, Xiao S, Chen H, Hanna F, Jotheeswaran AT, Luo D, et al. The magnitude of and health system responses to the mental health treatment gap in adults in India and China. Lancet. 2016;388(10063):3074-3084.
20. Soklaridis S, Adler Nevo G, Lieff S. Relationship-centred care in health: a 20-year scoping review. Patient Exp J. 2016;3(1):130-145.
21. Stewart M, Brown JB, Weston WW, Freeman TR, Ryan BL, McWilliam CL, et al. Patient-centered medicine: transforming the clinical method. 3rd ed. Boca Raton: CRC Press; 2014.
22. Thornicroft G. Stigma and discrimination limit access to mental health care. Epidemiol Psichiatr Soc. 2008;17(1):14-19. doi:10.1017/S1121189X00002621.
23. Tunks A, Berry C, Strauss C, Nyikavaranda P, Ford E. Patients' perspectives of barriers and facilitators to accessing support through primary care for common mental health problems in England: a systematic review. J Affect Disord. 2023.
24. Wanzer MB, Booth-Butterfield M, Gruber K. Perceptions of health care providers' communication: relationships between patient-centered communication and satisfaction. Health Commun. 2004;16(3):363-384.
25. Wang PS, Aguilar-Gaxiola S, Alonso J, Angermeyer MC, Borges G, Bromet EJ, et al. Use of mental health services for anxiety, mood, and substance disorders in 17 countries in the WHO world mental health surveys. Lancet. 2007;370(9590):841-850. doi:10.1016/S0140-

6736(07)61414-7.
26. Woltmann E, Grogan-Kaylor A, Perron B, Georges H, Kilbourne AM, Bauer MS. Comparative effectiveness of collaborative chronic care models for mental health conditions across primary, specialty, and behavioral health care settings: systematic review and meta-analysis. Am J Psychiatry. 2012;169(8):790-804. doi:10.1176/appi.ajp.2012.11111616.
27. Zolnierek KBH, DiMatteo MR. Physician communication and patient adherence to treatment: a meta-analysis. Med Care. 2009;47(8):826-834. doi:10.1097/MLR.0b013e31819a5acc.

REVIEW ARTICLE

Causation in Suicide: Clinical, Legal and Policy Interfaces- Insights from an Interdisciplinary Roundtable

Shivani Kalingarayar A. C

B.B.A.Ll.B(Hons.)

ABSTRACT

Background: Suicide presents courts, legislators, and policymakers with one of the most structurally difficult causation problems in contemporary law. Its complexity, extensively documented in clinical and epidemiological research, exceeds what existing legal causal standards were designed to accommodate.

Aim: This article, written from the perspective of a legal practitioner engaged in interdisciplinary advocacy, examines the specific mechanisms by which legal and policy frameworks fail to engage adequately with the causal reality of suicide.

Methods: Drawing on discussions from an interdisciplinary roundtable convened in April 2026 and situating them within established legal principles from Indian and comparative jurisdictions, the article argues that reforms to causal standards in abetment prosecutions, investigative procedures, and preventive policy frameworks are both necessary and achievable.

Results: It identifies the structural deficiencies of existing legal doctrines, proximate causation, the novus actus interveniens doctrine, and the narrow construction of instigation under Section 306 IPC, and proposes a framework for interdisciplinary engagement as the necessary institutional infrastructure for just legal outcomes and evidence-based prevention policy.

Keywords: causation; suicide; legal attribution; abetment; policy reform; foreseeability; novus actus interveniens; Section 306 IPC; interdisciplinary; India; divergence

Address for correspondence: Shivani Kalingarayar

B.B.A.Ll. B(Hons.)

Email: Adv.shivanikalingarayar@gmail.com

Submitted: 11.05.2026 **Accepted:** 25.05.2026

INTRODUCTION

Suicide represents one of the most consequential and least tractable challenges in global public health. The World Health Organization estimates that over 700,000 people die by suicide each year, making it the fourth leading cause of death among individuals aged 15 to 29.1 Beyond the epidemiological scale, what makes suicide a peculiarly difficult subject for interdisciplinary analysis is the fundamental tension between how different professional systems understand causation. Clinical practice, legal reasoning, and policy design each operate under different epistemological assumptions, different evidentiary standards, and different consequential stakes. Clinicians understand suicide as the outcome of a complex, non-linear convergence of biological vulnerability, psychological distress, environmental stress, and proximate precipitants. Legal systems, by contrast, are institutionally compelled to assign responsibility to identifiable agents through the application of causal standards, proximate cause, substantial contribution, foreseeability, that are designed for simpler chains of events. Policy frameworks must operationalise interventions at scale, often reducing clinical complexity into measurable indicators and categorical risk factors. Each system, in fulfilling its own functions, necessarily simplifies a phenomenon whose explanatory richness defies simplification.

The limitations of legal causation standards become particularly acute in proceedings involving allegations of abetment of suicide, negligence in clinical care, and the framing of inquests and preventive policy. This article examines these limitations from the perspective of legal practice and advocacy, drawing on the clinical evidence base as an essential reference point. It focuses on the divergence between what the evidence base establishes about suicidal causation and what existing legal and policy frameworks are capable of recognising. It draws on discussions from an interdisciplinary roundtable convened in April 2026, and situates those discussions within established legal principles from Indian and comparative jurisdictions.

The article proceeds as follows. Section II surveys the clinical evidence base on suicidal causation, identifying those features of that evidence which are most significant for legal and policy analysis. Section III outlines the legal frameworks through which causation is attributed in cases involving suicide, with particular attention to Indian law and comparative common law principles. Section IV maps the principal points of divergence between legal doctrine and the clinical evidence. Section V considers system-level implications for investigation, regulatory governance, and judicial reasoning. Section VI proposes a framework for interdisciplinary integration. Sections VII and VIII address limitations and conclusions, respectively.

II. THE CLINICAL EVIDENCE BASE: IMPLICATIONS FOR LEGAL AND POLICY ANALYSIS

This section does not purport to provide a clinical account of suicidal causation. Rather, it identifies, from a legal and policy perspective, those features of the clinical and epidemiological literature that carry direct implications for how law and policy should be structured. Three such features are of particular significance.

First, the dominant models in the clinical literature including the stress-diathesis framework and multi-factor interpersonal theories- understand suicide as the outcome of a complex, non-linear convergence of biological vulnerability, psychological distress, environmental stress, and proximate precipitants. No single factor is identified as sufficient;

Rather, it is the interaction of multiple contributing elements, operating across different timescales and subject to individual variation, that produces lethal risk. The legal consequence of this finding is significant: no single act, however serious, can reliably be characterised as the cause of a suicidal outcome. The corollary, equally important for liability analysis, is that the removal or modification of any one contributing factor may be sufficient to interrupt the pathway to death, which has implications for both but-for causation and substantial contribution tests.

Second, the clinical literature documents what has been described as the "suicidal state “- a transitional phase of acute psychological crisis in which the individual’s perceived options are profoundly constrained, and in which the capacity for reflective, autonomous decision-making is significantly diminished. This finding has direct implications for

the legal doctrine of novus actus interveniens. Courts that apply this doctrine to suicide cases by treating the deceased's act as the free and voluntary choice of a competent adult may be working from assumptions about autonomous volition that are inconsistent with the clinical evidence. Whether an individual in a suicidal state possesses the decision-making capacity that the law presupposes is a question that legal frameworks have not consistently engaged.

Third, clinical models recognise that the causal pathway to suicide may operate across extended periods, months, or years, during which vulnerability accumulates through sustained exposure to stressors such as relational abuse, financial coercion, institutional failure, or social marginalisation. This temporal dimension is poorly captured by legal frameworks that require a discernible proximate connection between identified conduct and a suicidal outcome. From a policy perspective, it also highlights the inadequacy of data collection frameworks such as those employed by the National Crime Records Bureau, which aggregate suicidal deaths under broad categorical headings without capturing the cumulative causal pathways that the evidence describes.

These three features of the clinical evidence base the non-linearity of causation, the constrained decision-making capacity of individuals in a suicidal crisis, and the extended temporal dimension of suicidal pathways are not peripheral observations. They are central findings of a well-developed research literature. The challenge this article addresses is that existing legal and policy frameworks are structurally ill-equipped to accommodate them.

III. LEGAL APPROACHES TO CAUSATION

Law must, by institutional necessity, make determinations of cause. Whether in criminal proceedings, civil liability, or inquest proceedings, the legal system requires that a causal relationship be established between a defendant's act or omission and a specified outcome. This requirement reflects not merely an epistemological claim but a normative one: legal responsibility must be assignable and bounded if it is to be just. In the common law tradition, causation is analysed in two stages: factual causation (the "but for" test) and legal causation (proximate or substantial cause). The "but for" test asks whether the harm would have occurred but for the defendant's act.[7] Legal causation then asks whether the defendant's contribution was sufficiently substantial and proximate to ground liability.8 Both stages present difficulties in the context of suicide, where multiple factors contribute to the outcome and where the act of the deceased is itself an intervening event. The doctrine of novus actus interveniens, a new intervening act that breaks the chain of causation, is particularly significant here.

In R v Kennedy (No 2), the House of Lords held that the free and informed act of an adult third party in self-administering a drug was sufficient to break the causal chain between the defendant's supply and the death.9 This reasoning has potential application to cases involving suicide: where the deceased exercised autonomous decision-making capacity, it may be argued that their act is a novus actus interveniens that severs the causal connection between any prior conduct of a defendant and the death. However, the doctrine does not apply where the antecedent conduct of the defendant substantially contributed to the undermining of the deceased's decision-making capacity.

The "thin skull" rule, established in R v Blaue, holds that a defendant must take the victim as they find them, including pre-existing vulnerabilities.10 In the context of suicide, this rule creates an interesting tension: it suggests that a defendant who acts upon a person of heightened vulnerability cannot escape liability by pointing to that vulnerability as a supervening cause. However, it also presupposes that the defendant's act was a cause at all, and it is precisely this initial causal connection that is most difficult to establish where suicide follows at a temporal remove from the impugned conduct.

Indian Legal Framework

In the Indian jurisdiction, the primary legal provision governing attribution in cases of suicide is Section 306 of the Indian Penal Code 1860, which criminalises abetment of suicide. Abetment, as defined under Sections 107–109 IPC, requires proof of instigation, conspiracy, or intentional facilitation. The courts have interpreted these elements to

require a direct and proximate connection between the accused's conduct and the deceased's decision to end their life, with a demonstrable mens rea.

The constitutional history of suicide in India reflects an evolving normative framework. In P Rathinam v Union of India, the Supreme Court read a right to die as implicit in the right to life under Article 21, effectively decriminalising attempted suicide. This was overturned in Gian Kaur v State of Punjab, where a larger constitutional bench held that the right to life does not encompass a right to die. The tension between these decisions reflects a broader jurisprudential uncertainty about autonomy, vulnerability, and the state's parents patriae obligations, a tension that has direct implications for how causation is approached in abetment cases.

The Mental Healthcare Act 2017 marked a significant legislative shift. Section 115 provides that any person who attempts suicide shall be presumed to be under severe stress and shall not be tried and punished under the Indian Penal Code. This provision reflects a clinical orientation in the legislative framework, one that treats the suicidal act as a symptom of distress rather than a volitional criminal act. In doing so, it implicitly acknowledges the clinical model of causation, even as Section 306 IPC continues to impose criminal liability on third parties through a framework that requires linear causal attribution.

The MHCA 2017 did not, however, resolve the underlying legislative incoherence. As commentators have noted, the Act achieved only a partial decriminalisation: Section 309 IPC remained formally on the statute book, and the presumption of severe stress established by Section 115 MHCA operated as a shield from prosecution rather than as a repeal of the offence itself. The Law Commission of India had twice recommended the repeal of Section 309 in 1971 and again in 2008, and the IPC (Amendment) Bill 1978 was passed by the Rajya Sabha but lapsed before the Lok Sabha could act on it. This legislative history of incremental and incomplete reform is itself evidence of the structural difficulty of accommodating clinical understandings of suicidal causation within a framework of penal law.

The legislative position has been further altered by the Bharatiya Nyaya Sanhita 2023, which came into force on 1 July 2024 and replaced the Indian Penal Code. Under Section 226 of the BNS 2023, attempted suicide is now a punishable offence only where the attempt is directed at compelling or restraining a public servant in the performance of official duties. In

all other cases, attempted suicide is no longer a criminal offence under the principal penal code. Abetment of suicide is retained as an offence under Section 108 of the BNS 2023 in materially similar terms to the former Section 306 IPC. The reform accordingly removes one dimension of the penal response to suicide while leaving intact the doctrinal framework that most directly implicates legal causation analysis in third-party liability cases.

In Common Cause v Union of India, the Supreme Court recognised the right to die with dignity in the context of passive euthanasia and advance directives. While distinct from suicide in the strict sense, this decision has broader implications for how the legal system understands the relationship between autonomy, clinical vulnerability, and the attribution of responsibility for a person's death.

In comparative law, the English Court of Appeal's decision in R v Wallace addressed causation in a case where the victim of a serious assault later travelled to Belgium for assisted dying. The court held that the question of causation required an assessment of whether the defendant's initial act remained an operating and substantial cause of death at the time of the assisted death, notwithstanding the intervening autonomous choice of the deceased. This reasoning is instructive for abetment cases, suggesting that temporal distance and intervening volition do not automatically sever the causal chain.

IV. POINTS OF DIVERGENCE: WHERE LEGAL DOCTRINE FAILS THE EVIDENCE

The clinical evidence surveyed in the preceding section establishes a picture of suicidal causation that legal doctrine is poorly equipped to accommodate. This section identifies the principal points of structural mismatch between the causal requirements of legal proceedings and what the evidence base establishes. The distortions that result are not incidental. They produce systematically unjust outcomes: liability imposed where causation is genuinely contested, and liability

denied where cumulative institutional or relational conduct is causatively significant.

The first major tension concerns the question of linearity. The evidence establishes that suicide results from a non-linear convergence of factors across multiple domains and timescales. Legal causation, however, is fundamentally a linear concept: it traces a causal chain from act to consequence, identifying which links in that chain are legally relevant.19 When courts apply this framework to suicide, they tend to focus on the most proximate precipitant, the final trigger, and to underweight the distal vulnerability factors that, from a clinical perspective, were equally constitutive of the outcome.

A second tension concerns the role of individual volition. Legal frameworks, particularly in the criminal law, place significant normative weight on autonomous choice as a factor that can interrupt causal chains. As noted in Section II, the clinical evidence indicates that the suicidal state is characterised by significant constraints on autonomous decision-making. The legal attribution of full volitional choice to a person in such a state may therefore be evidentially unsupported, yet the doctrine of novus actus interveniens invites precisely this attribution.

Third, there is a temporal dimension to the divergence. Legal causation typically requires a discernible temporal and causal connection between conduct and consequence. Clinical models recognise that the path to suicide may traverse extended periods of time, involving multiple episodes of vulnerability, partial recovery, and renewed crisis. Legal frameworks are not well-equipped to reason across this extended temporal horizon, particularly where the impugned conduct, say, a pattern of harassment, institutional failure, or relational abuse, operated cumulatively over months or years before producing the outcome.

Fourth, the question of foreseeability, a central element in both tort and criminal causation, is particularly contested. Courts have generally required that the relevant harm be reasonably foreseeable to the defendant. In the context of suicide, this raises the question of whether and to what extent a defendant ought to have known of the deceased's vulnerability. Clinical knowledge of risk factors and warning signs is extensive and well-documented,23 but it is not uniformly distributed across the lay population. Courts must therefore make judgments about what a reasonable person in the defendant's position ought to have known, and those judgments will be heavily influenced by assumptions about the predictability of suicidal behaviour that may be clinically contested.

In the Indian context, the judicial interpretation of "instigation" under Section 306 IPC has given rise to a body of difficulties. Courts have at times construed instigation narrowly, requiring active encouragement or a direct and proximate connection, while the clinical literature suggests that passive withdrawal of support, financial coercion, or sustained emotional abuse may be equally causative of a suicidal outcome even in the absence of explicit instigation.

V. SYSTEM-LEVEL IMPLICATIONS

The divergence between the clinical evidence base and existing legal causal standards does not remain at the level of abstract theory. It produces concrete and consequential effects at the system level, across investigation, institutional governance, and judicial reasoning.

Investigative Systems

Coroners' inquests and equivalent investigative proceedings are designed to establish the cause of death and, in some jurisdictions, to identify systemic lessons for prevention. However, the causal frameworks available to investigators are typically legal or quasi-legal in nature, requiring the identification of a cause of death that is formulated in terms of identifiable acts or omissions. This creates pressure towards oversimplification: the investigator must select a cause from a complex field of contributing factors, and that selection will inevitably reflect the categories available within the investigative framework rather than the full clinical picture.

In India, the National Crime Records Bureau collects data on suicides under broad categorical headings family problems, illness, financial difficulties, that aggregate vastly different clinical and social profiles into homogeneous categories. This data is then used to shape preventive policy. The epistemological

limitations of those categories, rooted in legal and administrative rather than clinical frameworks, constrain the quality and specificity of the policy responses that can be derived from them.

The inadequacy of the policy framework is most starkly illustrated by recent empirical evidence on the consequences of decriminalisation itself. A study examining suicide mortality data across 35 Indian states from 2001 to 2020 found that the enactment of the Mental Healthcare Act 2017 was not associated with any significant overall reduction in suicide mortality. More troublingly, in less developed states characterised by weaker health infrastructure and limited access to mental health services suicide mortality increased by approximately 1.9 times in the years following the Act's enactment. This finding does not vitiate the normative case for decriminalisation, which remains sound; but it powerfully illustrates that legislative reform, without accompanying investment in service delivery and mental health infrastructure, cannot of itself address the structural conditions that give rise to suicidal outcomes. India accounts for approximately 28 per cent of global suicides despite comprising 18 per cent of the world's population, a disproportion that will not be addressed by statutory reclassification alone.

Institutional Governance and Legal Duty of Care

Clinical institutions, hospitals, psychiatric facilities, and community health programmes, operate under legal duties of care that require them to anticipate and prevent foreseeable harm. When suicide follows a period of clinical contact, institutions face potential liability under both civil negligence law and, in some jurisdictions, criminal law. The legal standard of care applied in such proceedings is typically constructed around measurable risk indicators and documented assessments. This standard is not derived from the clinical literature on best practice; it is derived from what courts, operating under proximate causation frameworks, have determined to be a legally defensible response to foreseeable risk. From a policy perspective, this creates a structural misalignment: the legal standard may incentivise documentation-focused compliance over the kind of holistic relational engagement that the evidence suggests is clinically effective in reducing suicidal risk.

The policy concern here is not merely that legal standards may distort institutional practice — it is that the legal standard itself may be inadequate as a proxy for harm prevention. If the clinical evidence identifies relational continuity, crisis planning, and early intervention as the most effective preventive measures, and if the legal standard rewards documentation and risk categorisation instead, then the legal framework is not merely failing to prevent harm: it may be affirmatively structuring institutional responses away from what works. This is a legal and policy problem of the first order, and it calls for legislative attention to the design of duty-of-care standards in mental health and suicide prevention contexts.

Judicial Reasoning

Courts adjudicating cases involving suicide whether in abetment prosecutions, civil negligence claims, or constitutional challenges must reason about causation without consistent access to expert clinical frameworks. The adversarial system may introduce competing expert accounts, but the court's ultimate assessment of causation will be shaped by the doctrinal framework available to it. Where that framework is poorly equipped to handle multi-factorial, non-linear causation, the outcomes may be systematically unjust, either imposing liability where clinical causation is contested, or failing to impose it where it is established.

VI. TOWARDS INTERDISCIPLINARY INTEGRATION

The foregoing analysis suggests that the divergence between clinical and legal models of causation is not merely a conceptual inconvenience but a structural problem with practical consequences. The question, then, is how that divergence might be addressed without collapsing the legitimate institutional differences that give each framework its utility.

The first step towards integration is epistemic: each domain must develop a working understanding of the causal frameworks deployed by the others. Clinicians involved in medico-legal contexts as expert witnesses, as authors of risk assessments used in legal proceedings, or as members of serious

case review panels require structured exposure to legal causal standards and their application. Lawyers and adjudicators, conversely, require access to clinical literature on suicide and training in the interpretation of risk assessments that goes beyond a superficial understanding of categorical risk factors.

The second step is structural: interdisciplinary dialogue requires institutional forums in which it can occur on a sustained and systematic basis. Ad hoc expert testimony within adversarial proceedings is an inadequate substitute for structured cross-disciplinary collaboration. Roundtable processes, of the kind that generated the discussions informing this article, represent one model for such collaboration. Others include multi-disciplinary panels for serious case reviews, clinical-legal liaison roles within prosecution and public health agencies, and interdisciplinary modules within professional training programmes for lawyers, clinicians, and investigators.

The third step involves legal reform. Several specific reforms would reduce the structural mismatch between legal and clinical causal frameworks. These include the adoption of a cumulative causation standard in abetment cases — recognising that sustained courses of conduct may be causative even without a single identifiable act of instigation; the development of judicially accepted expert consensus guidance on clinical risk assessment; and legislative provision for clinical advisors in inquest and investigative proceedings.

The fourth step concerns data and evidence. As the National Mental Health Survey of India has documented, the epidemiology of suicide in India reflects patterns of distress that are deeply embedded in social structures, caste, gender, occupational precarity, and agrarian crisis that are only partially captured by existing legal and administrative categories.[34] The development of more clinically and sociologically informed data collection frameworks, aligned with legal investigative purposes, would improve both the quality of preventive policy and the evidentiary basis available to courts.

India's first National Suicide Prevention Strategy, released by the Ministry of Health and Family Welfare in November 2022, represents a tentative step towards the integrated framework this article has argued for. Drawing on the WHO's recommended multisectoral approach, the Strategy sets a goal of reducing suicide mortality by 10 per cent by 2030 and identifies multiple ministries and stakeholder bodies as responsible for implementation. It is notable, however, that the Strategy addresses policy targets and service delivery mechanisms without attending to the reform of legal causal standards that would support those targets. A prevention strategy that identifies social structure, agricultural distress, and economic precarity as significant contributors to suicidal outcomes cannot achieve its stated goals while courts and investigative bodies continue to operate under causal frameworks that require a single proximate cause and underweight distal structural contributors.

The international normative framework provides further resources for this analysis. The WHO's policy brief on the health aspects of decriminalisation of suicide makes explicit that criminalisation deters help-seeking, perpetuates stigma, and fails to recognise the social determinants of suicidal distress. The joint WHO and United Nations Office of the High Commissioner for Human Rights guidance on mental health, human rights, and legislation articulates the international standards against which domestic legal frameworks should be assessed, emphasising that rights-based protections must be embedded in legislative design and not confined to clinical guidelines. Comparative legislative models, including the New South Wales Suicide Prevention Legislation Discussion Paper of 2024, which proposes a statutory framework integrating duty-of-care obligations with population-level prevention architecture demonstrate that the alignment of legal accountability and public health in this domain is practically achievable and not merely aspirational.

The interdisciplinary roundtable process has demonstrated the value of sustained, structured cross-domain conversation. It has also revealed that the obstacles to integration are as much institutional and cultural as they are conceptual. Clinicians and lawyers inhabit different professional cultures, with different languages, different standards of evidence, and different conceptions of what constitutes an

adequate explanation. Overcoming those differences requires not merely goodwill but institutional investment in shared forums, shared vocabularies, and shared accountability mechanisms.

Roundtable Discussion: Principal Observations

The interdisciplinary roundtable convened in April 2026 surfaced a range of observations that illustrate the systemic character of the problem this article addresses. Several recurring themes emerged across the discussion, spanning vulnerability, institutional failure, clinical understanding, prevention, and the respective roles of the media, the judiciary, and government.

Youth, Education, and Social Pressure

Participants consistently identified youth as a disproportionately vulnerable population. The pressure-cooker environment created by competitive entrance examinations particularly those governing admission to institutions of national repute such as the IITs and IIMs was identified as a context in which educational structures designed to cultivate human capital have themselves become a proximate stressor. The aspiration of prestige attached by families to such institutions generates a gap between the public symbol of achievement and the private experience of competition, workload, and financial burden. It was noted that faculty members within these institutions are themselves subject to mounting pressure, as universities leverage student performance for institutional ranking purposes — creating a cascade of institutional stress. The associated costs of elite education were flagged as a compounding financial stressor. Participants further observed that Indian parents' tendency to evaluate children primarily through academic performance produces dynamics in which examination failure carries disproportionate psychological consequences and that this burden falls with particular harshness on young women, who face social shame in circumstances where male peers experience no comparable sanction. The growing phenomenon of romantic rejection as a precipitating factor among Generation Z was also raised as an emerging concern. It was noted, with some dark humour, that, at the present rate of education-related suicides, one might be tempted to say that restricting access to education itself would be a more effective intervention. The Supreme Court's cognisance of suicide among secondary school students in cases such as those of Sukhdeva Saha and Amit Kumar was cited as a significant judicial acknowledgement of the scale of the phenomenon. Mandatory counselling infrastructure in schools, along the model developed under the CBSE framework, and the establishment of counselling facilities in proximity to rather than within educational institutions, to preserve student confidentiality, were both recommended.

Clinical Understanding and the Multi-Factorial Nature of Causation. Participants emphasised that internal biological predispositions and external circumstantial pressures are equally constitutive of suicidal risk, and that the persistence of the biological-tendency dimension as a causal substrate calls for treatment-oriented rather than punitive responses. Psychologists and neuro-psychiatrists reported success in explaining biological factors to patients without diagnostic labelling, reducing stigma while improving engagement. It was observed that therapy, medication, and a supportive social environment together constitute the most reliable pathway to recovery. Crucially, participants noted that the multi-factorial character of suicidal causation, far from complicating intervention, actually multiplies the points at which an effective intervention may be introduced. In rural areas in particular, where the contributors to suicidal risk are multiple and mutually reinforcing, including family conflict, substance abuse, financial distress, dowry-related pressures, and educational deprivation, this multiplicity of factors correspondingly opens up a wider range of intervention opportunities.

Data, Stigma, and Structural Blind Spots

The National Crime Records Bureau data was characterised as capturing only the surface of the phenomenon, with complex and cumulative causal pathways flattened into administrative categories. Participants observed that Bihar's combination of the country's lowest literacy rates and its lowest reported suicide rates constitutes an empirical observation that resists easy interpretation but demands serious policy attention. Social stigma was identified as a structural barrier: the differential

response to examination failure for male and female students was highlighted as a systemic injustice, and the broader reluctance of individuals and families to seek help, reinforced by the cultural construction of suicide as shameful, continues to suppress both reporting and help-seeking.

Media, Awareness, and Civil Society

Media narratives were identified as a structural distortion that redirects public attention away from root causes. However, the media's positive potential was also acknowledged: making helpline numbers accessible through search results and other information channels could meaningfully extend the reach of crisis support. The SNEHA organisation's successful intervention, which resulted in the curtailment of television scenes normalising female self-immolation, was cited as a concrete example of the media's susceptibility to rights-based advocacy. Participants concluded that media sensitisation must be a deliberate policy objective, not an afterthought. Awareness at the community level was consistently identified as a prerequisite for early identification and timely intervention.

Institutional Responsibility and Prevention Architecture

Several demonstrable success stories were noted: the restriction of access to harmful pesticides and fertilisers has been associated with meaningful reductions in farmer suicides in certain States, and legislative action to curtail online gambling has reduced associated deaths. Post-crisis counselling extended not only to survivors but equally to the families and immediate social networks of those who have died was identified as a neglected dimension of current policy. The mental health of parents was raised as a systemic variable: where parental mental health needs go unmet, children's distress goes unrecognised. Participants advocated for expanded governmental support for awareness camps, community programmes, and civil society organisations. For juvenile populations in institutional care, the question of responsibility for minor offending was raised, and the introduction of drop-in centres where attendance forms a bail condition and is oriented towards recreational engagement was identified as a promising experimental model.

Government, Judiciary, and the Path Forward

Adequate governmental funding for preventive schemes was identified as a persistent institutional bottleneck. Participants noted that the judiciary has exercised, and must continue to exercise, its constitutional authority to compel transparency and accountability from executive and administrative bodies. The consensus view was that all tiers of government central, state, and local must coordinate their efforts in an organised and sustained manner. Suicide represents a loss of human capital to the State, and governments bear a corresponding obligation of care. Participants concluded that coherent, coordinated action at the intersection of policy, judicial precedent and public administration directed by the principle that multiple points of intervention exist across a complex causal field offers a realistic and evidence-grounded path towards meaningful reduction in suicide mortality.

VII. LIMITATIONS

This article is a conceptual synthesis rather than an empirical study. It does not report on the outcomes of specific cases, the results of clinical trials, or the findings of systematic surveys. Its conclusions are accordingly subject to the limitations inherent in any conceptual analysis: they cannot be verified against data, and they may reflect selective engagement with the available literature. While the article draws on established clinical and legal frameworks, the full complexity of each domain exceeds what can be adequately represented in a single article of this scope. The article addresses legal frameworks primarily with reference to Indian law and English common law. Other common law and civil law jurisdictions have developed their own approaches to causation in the context of suicide, and comparative analysis across a broader range of jurisdictions may reveal insights not captured here. Similarly, the clinical literature on suicide is extensive and continues to evolve; the frameworks described here reflect dominant models at the time of writing but should not be taken as exhaustive.

Finally, it should be noted that the discussions informing this article arose from a single roundtable

event. The diversity of perspectives represented at that event is acknowledged, but it cannot substitute for the kind of sustained, systematic empirical research, longitudinal studies, institutional audits, legislative impact assessments, that would be required to test the policy recommendations advanced here.

VIII. CONCLUSION

Suicide defies the kind of linear causal narrative that both popular understanding and legal doctrine tend to demand. The clinical and epidemiological evidence establishes, with considerable consistency, that it is the product of a dynamic and non-linear interaction between vulnerability, stress, transitional disruption, and acute psychological crisis. These features mean that any legal account of causation which focuses on a single proximate act ether of the deceased, a defendant, or a negligent institution is likely to be both evidentially inadequate and normatively unjust.

Legal systems are not insensitive to complexity. The thin skull rule, the doctrine of cumulative causation in certain civil contexts, and the evolving jurisprudence on foreseeability all provide some resources for engaging with multi-factorial causation. But these resources remain underdeveloped in the specific context of suicide, and their application is inconsistent across jurisdictions and proceedings. The result is a body of law that is simultaneously over-inclusive imposing liability on actors who made marginal contributions to a complex causal field and under-inclusive, failing to respond to systemic and institutional failures that are causally constitutive of suicidal outcomes.

The path forward lies not in replacing legal causal analysis with clinical analysis, nor in treating clinical models as legally irrelevant. It lies in the development of shared frameworks that preserve the institutional integrity of each domain while creating structured mechanisms for cross-domain understanding. The Bombay High Court's early recognition in Maruti Shripati Dubal of the need to engage with psychiatric evidence in evaluating the voluntariness of suicidal conduct was a step in this direction. More recent legislative developments under the Mental Healthcare Act 2017 reflect a clinical turn in Indian statutory policy. The task now is to translate these partial convergences into a coherent and institutionally embedded framework for interdisciplinary engagement.

Roundtable processes, interdisciplinary training, clinical advisory roles in investigative proceedings, and reform of causal standards in abetment prosecutions are among the practical steps through which this framework can be realised. The scale of suicide as a public health and justice challenge demands nothing less.

REFERENCES

1. Airedale NHS Trust v Bland [1993] AC 789 (HL).
2. Apter A, et al. The suicidal state: a transitional phase. Crisis. 2011;21(4):190.
3. Chester v Afshar [2004] UKHL 41; [2005] 1 AC 134 (HL).
4. Common Cause v Union of India (2018) 5 SCC 1 (Supreme Court of India).
5. Coroners and Justice Act 2009 (UK).
6. Fawcett J, Busch W, Jacobs D. Suicide: a four-pathway clinical-biochemical model. Ann N Y Acad Sci. 1997;836:288.
7. Freckelton I, Mendelson D, editors. Causation in law and medicine. Dartmouth Publishing; 2002.
8. Gian Kaur v State of Punjab (1996) 2 SCC 648 (Supreme Court of India).
9. Hawton K, van Heeringen K, editors. The international handbook of suicide and attempted suicide. Wiley; 2000.
10. Healy D. Lines of evidence on the risks of suicide with selective serotonin reuptake inhibitors. Psychother Psychosom. 2003;10(2):71.
11. Indian Penal Code 1860 (India), ss 107–109, 306.
12. Joiner TE. Why people die by suicide. Harvard University Press; 2005.

13. Kant R, Kumar V, Chaudhury S. Abetment of suicide: legal and clinical considerations. J Forensic Sci. 2015;57(3):763.
14. Mann JJ, et al. Toward a clinical model of suicidal behavior in psychiatric patients. Arch Gen Psychiatry. 1999;56(2):162.
15. Maruti Shripati Dubal v State of Maharashtra (1987) 88 Bom LR 589 (Bombay High Court).
16. Marzano L, et al. Prevention of suicidal behaviour. In: De Leo D, Fekete R, Schlebusch L, editors. Suicidal behaviour: theories and research findings. Hogrefe; 2004. p.65.
17. Mental Healthcare Act 2017 (India), s 115.
18. Ministry of Health and Family Welfare. National Mental Health Survey of India, 2015–16. NIMHANS, 2016.
19. National Crime Records Bureau. Accidental deaths and suicides in India 2022. Ministry of Home Affairs; 2023.
20. P Rathinam v Union of India (1994) 3 SCC 394 (Supreme Court of India).
21. R v Blaue [1975] 1 WLR 1411 (CA). R v Cheshire [1991] 1 WLR 844 (CA).
22. R v Kennedy (No 2) [2007] UKHL 38; [2008] 1 AC 269 (HL).
23. R v Smith [1959] 2 QB 35 (Courts-Martial Appeal Court).
24. R v Wallace [2018] EWCA Crim 690 (CA).
25. Shneidman ES. The suicidal mind. Oxford University Press; 1996.
26. Tousignant M, Séguin M. Suicide and life stressors. In: Hawton K, editor. Prevention and treatment of suicidal behaviour. Oxford University Press; 2005.
27. Wessely S, et al. Suicide, war, and accountability. Lancet. 2019;393:1467.
28. World Health Organization. Mental health action plan 2013–2030. WHO; 2021.
29. World Health Organization. Suicide worldwide in 2019: global health estimates. WHO; 2021.
30. Arya V. Suicide prevention in India. Ment Health Prev. 2024;33:200316.
31. Behere PB, Sathyanarayana Rao TS, Mulmule AN. Decriminalization of attempted suicide law: journey of fifteen decades. Indian J Psychiatry. 2015;57:122.
32. Bharatiya Nyaya Sanhita 2023 (India), s 226.
33. Bhargav H, Paliwal A. Suicide and the laws in India: an analysis. Int J Innov Res Technol. 2025;11(8):3121.
34. Ganguli D, Singh P, Das A. Decriminalizing suicide: the 2017 Mental Healthcare Act and suicide mortality in India, 2001–2020. Camb Prism Glob Ment Health. 2025;12:e74.
35. Mendelson D. Prevention of suicide: police powers, parliamentary intent and judicial interpretation. J Law Med. 2009;16:728.
36. Ministry of Health and Family Welfare. National suicide prevention strategy. Government of India; 2022.
37. NSW Ministry of Health. NSW suicide prevention legislation: discussion paper. NSW Health; 2024.
38. Ravindran S. The partial decriminalisation of suicide in India. Asian Law Public Policy Rev. 2022;7:100.
39. Saya A, et al. Notes on psychiatrist liability around the world regarding suicide. Front Psychiatry. 2025;15:1466325.
40. World Health Organization. WHO policy brief on the health aspects of decriminalization of suicide and suicide attempts. WHO; 2023.

41. World Health Organization, United Nations Office of the High Commissioner for Human Rights. Mental health, human rights and legislation: guidance and practice. WHO/OHCHR; 2023.

VIEW POINT

Pain Management as a Core Component of Modern Medicine: A Clinical Perspective

Sharat Narayanan
MD, Pain Management Specialist

ABSTRACT

Background: Pain is among the most common reasons patients seek medical attention and remains a major determinant of quality of life, functional capacity, and healthcare utilization. Contemporary medicine increasingly recognizes pain not merely as a symptom but as a multidimensional phenomenon with profound biological, psychological, social, and economic implications. Advances in neuroscience, pharmacology, rehabilitation medicine, psychology, interventional procedures, and palliative care have transformed pain medicine into a sophisticated multidisciplinary specialty.

Main Body: This article presents a perspective on the evolution of pain medicine, the importance of multidisciplinary care, contemporary challenges including the opioid crisis and undertreatment of pain, and future directions shaping the field.

Results: Effective pain management extends beyond analgesia and should be regarded as a fundamental component of patient-centered healthcare.

Keywords: Pain medicine, Pain management, Chronic pain, Biopsychosocial model, Multidisciplinary care, Rehabilitation, Evidence-based practice.

Address for correspondence: Sharat Narayanan
MD, Pain Management Specialist, Kaiser Permanente, McLean, Virginia, USA.
Email: sharat.narayanan@gmail.com

Submitted: 13.05.2026 **Accepted:** 27.05.2026

INTRODUCTION

Pain has been regarded as an inevitable accompaniment of disease and injury. However, contemporary medicine recognizes pain not only as a sensory experience but also as a multidimensional phenomenon with profound emotional, psychological, social, and economic implications. The International Association for the Study of Pain defines pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage."

Acute pain serves a protective physiological role by signalling injury or disease, whereas chronic pain frequently persists beyond normal tissue healing and may evolve into an independent pathological condition. Chronic pain affects hundreds of millions of individuals worldwide and is associated with reduced productivity, impaired physical functioning, psychiatric comorbidity, and increased healthcare expenditure.

Modern pain management has therefore emerged as an essential pillar of clinical medicine. Its scope extends far beyond analgesia and encompasses restoration of function, enhancement of quality of life, reduction of suffering, and optimization of long-term health outcomes.

THE EVOLUTION OF PAIN MEDICINE

Pain has evolved from being viewed as a symptom to being recognized as a complex disorder requiring comprehensive management.

Historical Evolution of Pain Medicine

The treatment of pain has evolved significantly over the centuries. Ancient civilizations relied on herbal remedies, spiritual interventions, and primitive surgical methods. The discovery of anesthesia in the nineteenth century revolutionized surgical medicine by permitting invasive procedures with reduced suffering.

The twentieth century witnessed the development of opioid pharmacology, regional anaesthesia, and early interventional procedures. Subsequently, advances in neurobiology and imaging clarified the mechanisms underlying nociceptive, neuropathic, and centralized pain states.

Pain medicine eventually emerged as a distinct specialty integrating anesthesiology, neurology, rehabilitation medicine, psychiatry, oncology, and palliative care. Today, specialized pain centers employ multidisciplinary teams that include physicians, psychologists, physical therapists, occupational therapists, and behavioral health professionals.

Neurophysiology and the Complexity of Pain

Pain perception involves intricate interactions between peripheral nociceptors, spinal pathways, ascending neural tracts, and higher cortical centers. Pain mechanisms are generally categorized into:

1. Nociceptive Pain

This results from tissue injury or inflammation and includes somatic and visceral pain syndromes.

2. Neuropathic Pain

Neuropathic pain arises from injury or dysfunction of the peripheral or central nervous system. Examples include diabetic neuropathy, postherpetic neuralgia, radiculopathy, and complex regional pain syndrome.

3. Centralized or Nociplastic Pain

Conditions such as fibromyalgia and certain chronic pain syndromes involve altered central pain processing without clear peripheral tissue damage.

The recognition of neuroplasticity has profoundly influenced modern pain medicine. Persistent pain can lead to sensitization within the peripheral and central nervous systems, producing amplified pain responses and chronic suffering independent of ongoing tissue injury.

PAIN AS A PUBLIC HEALTH ISSUE

Chronic pain represents one of the leading causes of disability worldwide. It contributes substantially to lost productivity, opioid misuse, mental health disorders, and healthcare resource utilization.

Common chronic pain conditions include:

- Low back pain
- Osteoarthritis
- Cancer pain
- Neuropathic pain syndromes
- Migraine and chronic headache disorders
- Postoperative chronic pain
- Musculoskeletal disorders

The economic burden of chronic pain exceeds that of many major chronic illnesses, including

cardiovascular disease and diabetes, when direct and indirect costs are considered.

Modern healthcare systems increasingly recognize effective pain management as both a clinical and societal necessity.

MULTIDISCIPLINARY APPROACH TO PAIN MANAGEMENT

One of the defining characteristics of contemporary pain medicine is the multidisciplinary model. Effective pain management rarely relies on a single modality and instead integrates pharmacologic, procedural, rehabilitative, and psychological strategies.

Pharmacologic Therapies

Pharmacotherapy remains foundational in pain management. Common medication classes include:

- Nonsteroidal anti-inflammatory drugs (NSAIDs)
- Acetaminophen
- Anticonvulsants
- Antidepressants
- Muscle relaxants
- Topical agents
- Opioids

Modern prescribing practices emphasize individualized treatment, careful risk assessment, and minimization of long-term opioid dependence.

Interventional Pain Procedures

Interventional techniques have become increasingly sophisticated and include:

- Epidural steroid injections
- Facet joint interventions
- Radiofrequency ablation
- Sympathetic nerve blocks
- Peripheral nerve stimulation
- Spinal cord stimulation
- Intrathecal drug delivery systems
- Vertebral augmentation procedures

These approaches may reduce reliance on systemic medications and improve functional outcomes in selected patients.

Physical and Rehabilitative Medicine

Physical therapy plays a central role in restoring mobility, strength, and functionality. Rehabilitation strategies focus on:

- Exercise therapy
- Postural correction
- Neuromuscular re-education
- Functional restoration
- Occupational therapy

Movement-based interventions are particularly important in chronic musculoskeletal pain syndromes.

Psychological and Behavioral Therapies

Psychological factors significantly influence pain perception and coping mechanisms. Cognitive behavioral therapy, mindfulness-based interventions, biofeedback, and pain coping strategies are increasingly integrated into comprehensive pain programs.

The biopsychosocial model recognizes that anxiety, depression, trauma, catastrophizing, and social isolation can substantially worsen pain experiences.

Pain Management in Surgical Medicine

Perioperative pain management has become an essential component of modern surgical care. Inadequately controlled postoperative pain may delay recovery, prolong hospitalization, and increase the risk of chronic pain development.

Enhanced Recovery After Surgery (ERAS) protocols emphasize multimodal analgesia, incorporating:

- Regional anesthesia
- Non-opioid medications
- Early mobilization
- Reduced opioid exposure

Regional anesthetic techniques, including peripheral nerve blocks and neuraxial anesthesia, have significantly improved postoperative outcomes and patient satisfaction.

Cancer Pain and Palliative Medicine

Pain management is integral to oncology and palliative care. Cancer-related pain may arise from tumor invasion, treatment-related complications, neuropathic mechanisms, or skeletal metastases.

Comprehensive cancer pain management includes:

- Opioid therapy
- Adjuvant analgesics
- Radiation therapy
- Interventional procedures

- Psychological support
- End-of-life symptom management

Palliative medicine emphasizes dignity, comfort, and quality of life, recognizing relief of suffering as a central ethical obligation of medicine.

CONTEMPORARY CHALLENGES IN PAIN MEDICINE

The Opioid Crisis and Responsible Prescribing

The rise in opioid prescribing during the late twentieth and early twenty-first centuries led to widespread misuse, addiction, and overdose-related mortality in several countries, particularly the United States.

This crisis fundamentally reshaped pain medicine and reinforced the importance of balanced prescribing practices. Modern approaches emphasize:

- Risk stratification
- Prescription monitoring
- Functional outcome assessment
- Multimodal non-opioid therapies
- Patient education
- Safe tapering strategies when appropriate

Importantly, contemporary pain medicine seeks to balancelegitimate analgesic needs with the prevention of substance misuse and diversion.

Ethical Dimensions of Pain Management

Pain management raises important ethical questions involving patient autonomy, access to care, equity, and the duty to relieve suffering.

Undertreatment of pain remains prevalent in vulnerable populations, including:

- Elderly patients
- Children
- Patients with cognitive impairment
- Racial and ethnic minorities
- Individuals with limited healthcare access

Ethical pain management requires compassionate, individualized, and culturally sensitive care while maintaining scientific rigor and responsible stewardship of controlled substances.

FUTURE DIRECTIONS IN PAIN MANAGEMENT

The future of pain medicine is increasingly shaped by technological innovation and precision medicine. Emerging areas include:

Neuromodulation

Advanced spinal cord and peripheral nerve stimulation systems offer targeted therapy for refractory pain conditions.

Regenerative Medicine

Platelet-rich plasma, stem cell therapies, and biologic approaches are being investigated for musculoskeletal disorders.

Artificial Intelligence and Predictive Analytics

Machine learning may help predict treatment response, opioid risk, and individualized pain trajectories.

Precision Pharmacology

Genetic and molecular profiling may eventually permit tailored analgesic regimens based on patient-specific pharmacogenomics.

Virtual Reality and Digital Therapeutics

Virtual reality-based rehabilitation and digital behavioral therapies are gaining importance in chronic pain treatment.

WHY PAIN MANAGEMENT DESERVES GREATER RECOGNITION

Pain remains one of the most significant causes of disability and healthcare utilization worldwide. Despite remarkable advances in neuroscience and therapeutics, pain continues to be inadequately treated in many clinical settings. The increasing prevalence of chronic pain, ageing populations, cancer survivorship, and complex comorbid conditions underscores the need for multidisciplinary approaches that extend beyond symptom suppression.

Pain medicine should therefore be viewed not merely as a supportive service but as an integral component of modern healthcare. Continued collaboration between physicians, rehabilitation specialists, psychologists, nurses, and allied health professionals will be essential in delivering comprehensive, patient-centered care.

CONCLUSION

Pain management occupies a central and expanding role in modern medicine. The field has evolved from simplistic symptom suppression to a sophisticated, multidisciplinary discipline grounded in neuroscience, rehabilitation, psychology, and evidence-based therapeutics.

Effective pain management improves physical function, emotional well-being, surgical recovery, and quality of life while reducing disability and healthcare burden. At the same time, the opioid crisis has highlighted the necessity for balanced, ethical, and individualized treatment approaches.

The future of pain medicine lies in precision-based, multimodal, and patient-centered care that integrates pharmacologic, procedural, rehabilitative, and psychological therapies. As medical science advances, the humane treatment of pain will remain one of the most fundamental responsibilities of physicians and healthcare systems worldwide

CASE REPORT

Logopenic Variant Primary Progressive Aphasia Presenting with Severe Depressive Syndrome and Suicidal Behaviour: A Case Report

Sanjana Thomas[1] & Gauthamadas. U[2]
[1] Counselling Psychologist, Doc Gautham's Neuro Centre, Chennai
[2] Editor-in-Chief, Journal of Applied Therapeutics

ABSTRACT

Background: Logopenic variant Primary Progressive Aphasia (lvPPA) is a language-predominant neurodegenerative syndrome characterized by progressive word retrieval deficits, impaired phonological processing, and hesitant speech. Unlike classical amnestic presentations of Alzheimer's disease, patients with LvPPA often present with language impairment as the earliest and most disabling symptom. Psychiatric manifestations may coexist and contribute to diagnostic complexity.

Case Presentation: A 62-year-old male presented with progressively worsening language impairment characterized predominantly by difficulty retrieving words and interrupted speech production. Family members reported that the patient frequently knew what he intended to communicate but was unable to retrieve appropriate words. Symptoms began approximately 18 months before evaluation and progressively worsened over time. Over the subsequent months, the patient developed depressive symptoms characterized by low mood, apathy, reduced motivation, feelings of worthlessness, and social withdrawal. Neuropsychiatric symptoms intensified and culminated in a suicidal attempt by ingestion of washing fluid approximately three months before presentation. Magnetic resonance imaging demonstrated minimal nonspecific white matter microangiopathic changes without major structural abnormalities or significant cortical atrophy. Florbetaben F18 amyloid PET imaging demonstrated diffuse cortical amyloid positivity involving frontal, temporal, parietal, and posterior cingulate–precuneus regions with minimal associated atrophy, supporting Alzheimer-spectrum pathology. The clinical profile and biomarker findings were considered most consistent with logopenic variant Primary Progressive Aphasia.

Conclusion: This case highlights the importance of recognizing atypical Alzheimer-spectrum presentations in individuals presenting with progressive language dysfunction and psychiatric symptoms.

Keywords: Logopenic variant Primary Progressive Aphasia; lvPPA; Alzheimer-spectrum disease; amyloid PET; aphasia; depression

Address for correspondence: Sanjana Thomas
Counselling Psychologist, Doc Gautham's Neuro Centre, Chennai.
Email: sanjanacounsellingpsychologist@gmail.com

Submitted: 16.05.2026 **Accepted:** 30.05.2026

INTRODUCTION

Primary Progressive Aphasia (PPA) is a clinical syndrome characterized by gradual and progressive deterioration of language functioning caused by underlying neurodegenerative disease. Unlike typical dementias, in which episodic memory impairment often represents the earliest and most prominent feature, PPA initially presents with selective deterioration in language abilities while other cognitive domains remain relatively preserved during the early stages of illness. Patients may experience increasing difficulty with speaking, word retrieval, sentence formulation, comprehension, reading, or writing, depending on the specific language networks involved and the underlying neuropathology. [1]

Current diagnostic classifications recognize three principal variants of PPA: nonfluent/agrammatic variant, semantic variant, and logopenic variant. Each subtype demonstrates distinct clinical, neuroanatomical, and pathological characteristics. [2] Among these, logopenic variant Primary Progressive Aphasia (lvPPA) has emerged as a clinically important language-predominant neurodegenerative syndrome frequently associated with underlying Alzheimer-spectrum pathology. Unlike semantic and nonfluent variants, which are more commonly associated with frontotemporal lobar degeneration, lvPPA frequently demonstrates cortical amyloid deposition and atypical presentations of Alzheimer's disease. [2 3]

Clinically, lvPPA is characterized by progressive word-finding difficulty, pauses during spontaneous speech, impaired sentence repetition, and phonological retrieval deficits. Patients frequently report awareness of what they intend to communicate but experience difficulty retrieving the appropriate lexical content. Speech output often becomes hesitant and interrupted because of impaired word retrieval rather than motor speech dysfunction. In the early stages of illness, grammar, articulation, and single-word comprehension are relatively preserved, which may contribute to delayed recognition and diagnostic uncertainty. [2 4]

Neuroanatomically, lvPPA is commonly associated with dysfunction involving the left temporoparietal language network, particularly regions involved in phonological processing and verbal working memory. Structural neuroimaging findings in the early disease stages may remain subtle or nonspecific and can occasionally reveal minimal cortical atrophy despite clinically significant language dysfunction. Functional and molecular imaging modalities, particularly amyloid positron emission tomography (PET), have therefore become increasingly valuable in identifying underlying Alzheimer pathology and improving diagnostic accuracy in atypical neurodegenerative presentations. [3 5]

In addition to language impairment, patients with progressive aphasic syndromes may experience substantial psychiatric and behavioral manifestations, including depression, anxiety, apathy, emotional withdrawal, and suicidal ideation. Such symptoms may emerge particularly in individuals with preserved insight regarding progressive communication decline. Psychiatric manifestations can initially overshadow language dysfunction, resulting in delayed diagnosis or misattribution of symptoms to primary psychiatric illness. [6 7]

The present case describes a patient presenting with progressive language dysfunction characterized predominantly by word retrieval impairment accompanied by severe depressive symptomatology and suicidal behavior. Despite minimal structural abnormalities on MRI, Florbetaben F18 amyloid PET imaging demonstrated significant cortical amyloid positivity supporting an Alzheimer-spectrum neurodegenerative process consistent with logopenic variant Primary Progressive Aphasia. This case highlights the diagnostic challenges associated with atypical neurodegenerative presentations and emphasizes the importance of integrating clinical assessment with biomarker-supported neuroimaging findings.

CASE PRESENTATION

A 62-year-old male presented with a progressively evolving language disturbance characterized predominantly by impaired lexical retrieval and increasing difficulty in spontaneous verbal expression. According to collateral information obtained from family members, the patient consistently demonstrated awareness of intended communication but experienced significant

difficulty retrieving appropriate words during conversation. Initial symptoms reportedly emerged approximately 18 months before evaluation and followed a gradual but steadily progressive course. Over time, speech became increasingly hesitant and interrupted by frequent pauses, resulting in noticeable impairment in day-to-day communication.

During the subsequent course of illness, the patient developed prominent neuropsychiatric manifestations, including persistent low mood, apathy, reduced motivation, emotional withdrawal, and pervasive feelings of worthlessness. These symptoms progressively intensified and were associated with substantial psychosocial dysfunction. Approximately three months before presentation, the patient reportedly attempted suicide through ingestion of washing fluid, suggesting severe psychological distress in the context of preserved awareness of functional decline.

Neuroimaging evaluation was undertaken as part of the diagnostic workup. Magnetic resonance imaging (MRI) of the brain demonstrated minimal nonspecific white matter microangiopathic changes without significant cortical atrophy or focal structural abnormalities. Subsequent Florbetaben F18 amyloid positron emission tomography (PET) imaging demonstrated diffuse cortical loss of normal gray–white differentiation involving bilateral frontal, temporal, parietal, and posterior cingulate/precuneus regions, with overall findings interpreted as a positive amyloid scan indicative of frequent neuritic plaque deposition with minimal associated atrophy. The combination of progressive language-predominant symptomatology and biomarker-supported cortical amyloid pathology was considered highly suggestive of an Alzheimer-spectrum neurodegenerative process, with clinical findings most consistent with logopenic variant Primary Progressive Aphasia (lvPPA).

INVESTIGATIONS

Neuroimaging evaluation was performed as part of the diagnostic workup. Magnetic resonance imaging (MRI) of the brain demonstrated normal ventricular and cisternal anatomy appropriate for age, with no evidence of hydrocephalus, focal mass lesion, diffusion restriction, or hemosiderin deposition. Major vascular flow voids were preserved. Multiple scattered foci of FLAIR hyperintensities were identified within the white matter and interpreted as mild nonspecific microangiopathic changes. No significant cortical atrophy or focal structural abnormalities were identified on structural imaging.

Subsequent molecular neuroimaging with Florbetaben F18 amyloid positron emission tomography (PET) demonstrated diffuse loss of normal gray–white matter differentiation involving bilateral frontal, lateral temporal, and parietal cortices, as well as posterior cingulate and precuneus regions. The final radiological interpretation described the scan as positive for frequent amyloid neuritic plaques with minimal associated atrophy. The observed distribution pattern was considered highly suggestive of widespread cortical amyloid deposition and supportive of an underlying Alzheimer-spectrum neurodegenerative process. These findings provided important biomarker evidence in favor of logopenic variant Primary Progressive Aphasia (lvPPA), particularly in the context of relatively minimal structural abnormalities observed on MRI.

Additional laboratory investigations revealed thrombocytopenia, elevated creatine kinase levels, hyponatremia, and reduced iron saturation. These findings initially broadened the diagnostic considerations and prompted evaluation for alternative metabolic, systemic, and potentially autoimmune etiologies. However, the progressive language-predominant clinical course, combined with biomarker-supported cortical amyloid pathology, strongly favoured an underlying neurodegenerative etiology.

DISCUSSION

This case illustrates an atypical presentation of Alzheimer-spectrum disease in which language impairment preceded generalized cognitive decline. Progressive word-finding difficulty with preserved

awareness of intended communication represents a characteristic early feature of LVPPA.

A notable feature of this case was the discrepancy between relatively minimal MRI findings and markedly positive amyloid PET imaging. Structural imaging abnormalities may remain limited during early stages, whereas molecular imaging can provide greater diagnostic specificity.

Another clinically significant aspect was the presence of severe depressive symptoms and suicidal behaviour. Patients with insight-preserved neurodegenerative disorders may experience considerable emotional distress as they become aware of a progressive decline in communication abilities.

The coexistence of laboratory abnormalities further complicated clinical interpretation and initially broadened diagnostic considerations. Nevertheless, the longitudinal progression and biomarker profile strongly supported a neurodegenerative etiology.

CONCLUSION

Progressive word-finding difficulty in middle-aged and older adults warrants careful evaluation for atypical neurodegenerative syndromes, particularly when accompanied by preserved insight and evolving psychiatric symptoms.

This case demonstrates the diagnostic utility of Florbetaben F18 amyloid PET imaging in identifying Alzheimer-spectrum pathology in patients with minimal structural MRI abnormalities and language-predominant presentations.

Early recognition of LVPPA is clinically important not only for diagnostic clarification and prognostication, but also for management of associated psychiatric morbidity, including depression and suicide risk.

REFERENCES

1. Mesulam MM. Primary progressive aphasia. Ann Neurol. 2001;49(4):425–432.
2. Gorno-Tempini ML, Hillis AE, Weintraub S, Kertesz A, Mendez M, Cappa SF, et al. Classification of primary progressive aphasia and its variants. Neurology. 2011;76(11):1006–1014.
3. Leyton CE, Hodges JR. Towards a clearer definition of logopenic progressive aphasia. Curr Neurol Neurosci Rep. 2013;13(11):396.
4. Rogalski E, Cobia D, Harrison TM, Wieneke C, Thompson CK, Weintraub S, et al. Anatomy of language impairments in primary progressive aphasia. J Neurosci. 2011;31(9):3344–3350.
5. Rabinovici GD, Jagust WJ, Furst AJ, Ogar JM, Racine CA, Mormino EC, et al. Aβ amyloid and glucose metabolism in three variants of primary progressive aphasia. Ann Neurol. 2008;64(4):388–401.
6. Marshall CR, Hardy CJD, Volkmer A, Russell LL, Bond RL, Fletcher PD, et al. Primary progressive aphasia: a clinical approach. J Neurol. 2018;265(6):1474–1490.
7. Ducharme S, Dickerson BC. The neuropsychiatric examination of the young-onset dementias. Psychiatric Clinic North Am. 2015;38(2):249–264.

JOURNAL OF APPLIED THERAPEUTICS (JAT)

Call for Papers and Author Submission Information

Institute of Applied Therapeutics (IAT), Chennai
Volume 1 | Issue 1 | June 2026

JAT invites submissions from researchers, clinicians, academicians, healthcare professionals, and interdisciplinary scholars whose work advances therapeutic science and practice.

Submission Process

Authors may submit manuscripts through the Journal's online submission system by following the steps below:

Step 1: Create/Register an author account through the journal submission portal.
Step 2: Log in with your registered credentials, then select New Submission.
Step 3: Complete the submission checklist and provide all required manuscript details, including title, authorship information, abstract, keywords, and declarations.
Step 4: Upload the manuscript and any supplementary files, figures, tables, or ethical approval documents where applicable.
Step 5: Review all entered information carefully and complete the submission process.
Step 6: Authors will receive confirmation upon successful submission and may track manuscript progress through the online system.

Editorial and Peer Review Process

All submitted manuscripts undergo an initial editorial assessment followed by a double-blind peer review process to evaluate scientific quality, methodological rigor, originality, and relevance to the journal scope.

Editorial Process

Initial Submission → Editorial Screening → Peer Review → Editorial Decision → Copyediting and Publication

Manuscript Submission

Authors are encouraged to review the journal guidelines and complete manuscript submissions through the online journal management system:
https://journal.appliedtherapeutics.in/index.php/jat/index
For detailed author guidelines, publication policies, and submission instructions, please visit the journal website.

Journal of Applied Therapeutics (JAT)

Volume 1, Issue 1 (2026)

Published by: Institute of Applied Therapeutics (IAT), Chennai

The **Journal of Applied Therapeutics (JAT)** is an interdisciplinary, practice-oriented journal that focuses on translating scientific knowledge into meaningful, real-world healthcare applications. The inaugural issue reflects this philosophy through articles exploring the multidimensional impact of head injury and barriers to rehabilitation, an integrated neurobehavioral outpatient model aimed at improving treatment acceptance, the complexity of suicide and its legal, social, and clinical determinants, the importance of multidisciplinary pain management as a core component of modern medicine, and a case report highlighting atypical Alzheimer-spectrum disease presenting with language impairment, depression, and suicidal behaviour. Collectively, these articles emphasize that effective healthcare requires the integration of biological, psychological, social, ethical, and practical factors to address complex human problems in real-world settings.