SVOA Medical Research
ISSN: 2977-3644

ScienceVolks Open Access

Case Series

Pain Clinic and Societal Safety: Promoting Road Safety, Family Well-being, Workplace Safety, and Risk Management

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https://doi.org/10.58624/SVOAMR.2025.03.017

Received: July 28, 2025

Published: August 15, 2025

Citation: Bamgbade OA, Savage KJ, Bamgbade TO, Tase NE, Bada BE, Yimam GT, Mwizero AG, Oyewole TE, Chansa M, Gitonga GG, Oluwole OJ, Thibela T, Martinez YL, Chauke GD. Pain Clinic and Societal Safety: Promoting Road Safety, Family Well-being, Workplace Safety, and Risk Management. *SVOA Medical Research 2025,* 3:4, 159-166. doi: 10.58624/SVOAMR.2025.03.017

Abstract

Background: Chronic pain affects 20% of adults globally and is frequently linked to substance dependence and mental health issues. These issues pose individual, family, and societal risks. Pain clinics function as socio-medical institutions promoting societal well-being through risk management. This study examines the broader sociomedical role of pain clinics in mitigating societal risks related to substance misuse.

Methods: We used convenience sampling to conduct a prospective observational clinical study of 1,203 patients who underwent routine clinical care from January 2018 to June 2025. Participants received substance misuse therapy for one of the three subgroups: road safety, family safety, or workplace safety. Data on demographics, diagnosis, and therapy types were collected and summarized with frequencies and proportions. Chi-square tests were used to assess differences in age and gender across therapy subgroups.

Results: Most patients were female (60%), middle-aged (46%), and White (49%). About 4.9% (n=59) received therapy targeting road safety or fitness to drive; 1.9% (n=23) for family safety or child custody; and 9% (n=108) for workplace safety or occupational risk. Among those receiving road safety therapy, 69.5% were male, 49.1% early adults, and 40.7% middle-aged. For patients receiving family safety therapy, 82.6% were female, 43.5% early adults, and 39.1% youths. Workplace safety therapy cases were mostly males (69.4%) and early adults (57.4%). Significant associations existed between therapy and gender (χ^2=23.56, p<0.001) and age (χ^2=20.58, p=0.002).

Conclusion: Pain clinics serve a dual role in healthcare and societal risk management. Pain clinics enhance road safety, promote family well-being, and mitigate workplace risks. Tailoring interventions based on demographic patterns can improve public safety and therapeutic outcomes. Integrating such services into enterprise-wide risk management frameworks strengthens organizational and societal resilience.

Keywords: Substance misuse therapy, Road safety, Family well-being and safety, Workplace safety, Enterprise-wide risk management, Chief risk officer

Introduction

The impact of chronic pain is pervasive, affecting approximately 20% of adults worldwide and their families, communities, and societies (1,2). Chronic pain is associated with many behavioral and psychological disorders, including depression, anxiety, post-traumatic stress disorder (PTSD), insomnia, drug misuse, or substance dependence (3,4). These psychological disorders may harm the patient, family, and society. These comorbidities may result in job loss, family collapse, homelessness, legal complications, and risks to public safety.

Although pain clinics are medical centers for the analgesia context, they are also sociomedical institutions that promote public safety, risk management, and societal well-being. Pain clinics contribute to public safety through opioid-free injection therapy, judicious prescribing of opioids or sedatives, fitness to drive, substance misuse therapy, child custody battles, and workplace risk management. This clinical study evaluated the prevalence and characteristics of patients' risk factors on family well-being, child custody, road safety, addiction therapy, public safety, and workplace risk management.

Methods

This prospective observational clinical study was registered on the Clinical Trials PRS website, with the PRS number NCT06076512. The healthcare institution approved it as a quality assurance study of routine healthcare and sociology that does not require formal ethics review. All the patients provided informed consent. The study analyzed the impact of pain clinic services on patients' substance dependence, family health, road safety, and workplace safety.

Data collection included patients' age, ethnicity, gender, diagnosis, and therapy needs. The three therapy subgroups included substance misuse therapy to enable road safety, family safety, or workplace safety. Patients' ethnicity was categorized as Arab, Black, Central Asian (Afghanistan, Iran, Kazakhstan), Indigenous (First Nations, Metis), Latino, NorthEast Asian (China, Japan, Korea), SouthEast Asian (Philippines, Vietnam, Cambodia, Thailand), South Asian (India, Pakistan, Bangladesh, Nepal), and White.

The prospective data collection methodology mitigated the risk of outcome or information recall bias. The cohort and longitudinal approach facilitated data collection on multiple variables and outcomes over specific durations, potentially discovering new associations between outcomes and variables (5). Data were analyzed with IBM® SPSS® Statistics 28 (IBM Corp, Armonk, NY) using t-test, analysis of variance, regression analysis, and Pearson Chi-square test. The data are compared, analyzed, and interpreted appropriately. Data are presented as figures, tables, categories, and numbers.

Case Presentation

We studied 1,203 consecutive patients who underwent treatment at a specialist pain management clinic in Canada from January 2018 to June 2025. We analyzed routine clinical care and outcomes. The consecutive sampling methodology minimized the risk of patient selection bias. This convenience sample included all patients who received clinical treatment. The patients were provided multimodal value-based therapy for chronic pain, substance misuse, or drug dependence. Of the total cohort, 190 (16%) received substance misuse therapy. Each of these patients received individualized or personalized value-based treatment for one of three therapy subgroups: substance misuse therapy to enable road safety, family safety, or workplace safety. The treatment included personalized multimodal combinations of opioid-minimization pain therapy, non-benzodiazepine anxiolytic therapy, substance-specific withdrawal therapy, clonidine, methotrimeprazine, anti-depressants, or cognitive behavioural therapy (CBT).

Results

A total of 1,203 patients were treated in the specialist pain clinic during the period. Table 1 shows their sociodemographic profile. The demographic profile revealed that 60% of patients were female (n = 721) and 40% were male (n = 482). The age distribution showed that the majority were middle-aged adults (46–64 years), comprising 46% of the cohort (n = 553), followed by early adults aged 31–45 years (27%, n = 325), older or elderly individuals aged 65–99 years (20%, n = 241), and youth aged 17–30 years (7%, n = 84).

Ethnic representation was led by White patients, who made up nearly half the cohort (49%, n = 589), followed by South Asians (24.3%, n = 292), and smaller proportions of Latino (4.9%), Indigenous (4.4%), NorthEast Asian (4.3%), SouthEast Asian (4.2%), Black (3.9%), Central Asian (2.7%), and Arab (2.3%) individuals. Of the total cohort, 190 patients (16%) received substance misuse therapy, comprising 59 (31%) for road safety, 23 (12%) for family safety, and 108 (57%) for workplace safety.

Table 1. All patients treated at the pain clinic during January 2018 to June 2025, total number=1203 patients.

Parameter	Category	Population number	%
Gender	Female	721	60
	Male	482	40
Age	Youth 17-30 years	84	7
	Early adult 31-45 years	325	27
	Middle-aged 46-64 years	553	46
	Elderly 65-99 years	241	20
Ethnicity	Arab	28	2.3
	Black	48	3.9
	Central Asian	32	2.7
	Indigenous	53	4.4
	Latino	59	4.9
	NorthEast Asian	52	4.3
	SouthEast Asian	50	4.2
	South Asian	292	24.3
	White	589	49.0

Table 2 highlights the characteristics of patients undergoing substance misuse therapy towards road safety or fitness to drive. Fifty-nine patients (4.9% of the total) underwent substance misuse therapy to improve road safety or fitness to drive. Most of this subgroup were male (69.5%, n = 41), and the predominant age group was early adulthood (31–45 years), accounting for 49.1% (n = 29). Middle-aged adults represented 40.7% (n = 24), while youth and elderly participants were underrepresented at 6.8% (n = 4) and 3.4% (n = 2), respectively. Of the male patients, 5 had concurrent obstructive sleep apnea, and they received nocturnal mask-CPAP therapy as part of their safety management.

Table 2. Patients undergoing substance misuse therapy towards road safety or fitness to drive, total number=59 patients.

Parameter	Category	Population number	%
Gender	Female	18	30.5
	Male	41	69.5
Age	Youth 17-30 years	4	6.8
	Early adult 31-45 years	29	49.1
	Middle-aged 46-64 years	24	40.7
	Elderly 65-99 years	2	3.4

Table 3 shows the characteristics of patients undergoing substance misuse therapy towards family safety or the child custody legal process. In this subgroup addressing family safety and child custody issues, 23 patients (1.9% of the total) received substance misuse therapy. Females represented a dominant majority in this group (82.6%, n = 19), with early adulthood again being the most common age bracket (43.5%, n = 10). Youth comprised 39.1% (n = 9), and the remaining 17.4% (n = 4) were middle-aged. No elderly patients were recorded in this category.

Table 4 highlights the characteristics of patients undergoing substance misuse therapy towards workplace safety or risk management. A total of 108 patients (9.0%) engaged in therapy toward workplace safety or occupational risk management. Males predominated (69.4%, n = 75), and the largest age group was early adults (57.4%, n = 62), followed by middle-aged adults (31.5%, n = 34), youth (10.2%, n = 11), and one elderly participant (0.9%, n = 1).

Chi-square tests of independence were conducted to evaluate whether gender and age distributions significantly differed across the three substance misuse therapy subgroups: road safety, family safety, and workplace safety. These findings indicate that both gender and age play significant roles in determining the focus of substance misuse interventions within pain clinic populations.

Table 3. Patients undergoing substance misuse therapy towards family safety or child custody, total number= 23 patients.

Parameter	Category	Population number	%
Gender	Female	19	82.6
	Male	4	17.4
Age	Youth 17-30 years	9	39.1
	Early adult 31-45 years	10	43.5
	Middle-aged 46-64 years	4	17.4
	Elderly 65-99 years	0	0

Table 4. Patients undergoing substance misuse therapy towards workplace safety or risk management, total number= 108 patients.

Parameter	Category	Population number	%
Gender	Female	33	30.6
	Male	75	69.4
Age	Youth 17-30 years	11	10.2
	Early adult 31-45 years	62	57.4
	Middle-aged 46-64 years	34	31.5
	Elderly 65-99 years	1	0.9

Figure 1 reveals the gender distribution for all the therapy subgroups. Figure 2 indicates the gender distribution in the subgroup of road safety. Figure 3 shows the gender distribution in the subgroup of family safety. Figure 4 highlights the gender distribution in the subgroup of workplace safety. A chi-square test revealed a significant association between gender and the purpose of therapy ($\chi^2 = 23.56$, $p < 0.001$). This demonstrates that gender distribution is not uniform across the subgroups. Women were overrepresented in the family safety group, whereas men dominated the road safety and workplace safety groups.

Figure 5 shows the age distribution for all the therapy subgroups. Figure 6 indicates the age distribution in the subgroup of road safety. Figure 7 reveals the age distribution in the subgroup of family safety. Figure 8 highlights the age distribution in the subgroup of workplace safety. The age distribution differed significantly across the subgroups ($\chi^2 = 20.58$, $p = 0.002$). The early adult group (ages 31–45) was the most represented in all categories. The youth group was disproportionately present in the family safety subgroup, and older people were nearly absent across all categories.

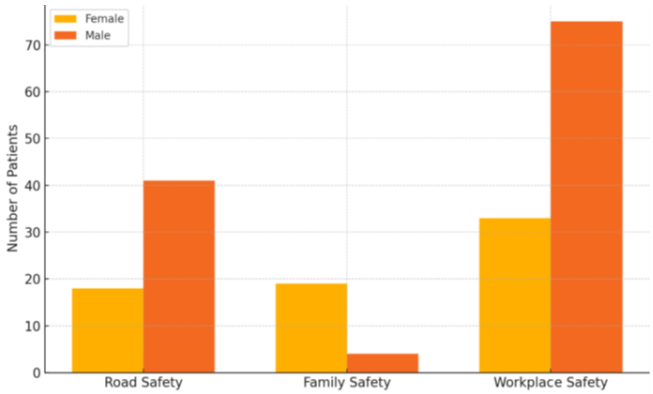

Figure 1. *Gender distribution by all therapy subgroups.*

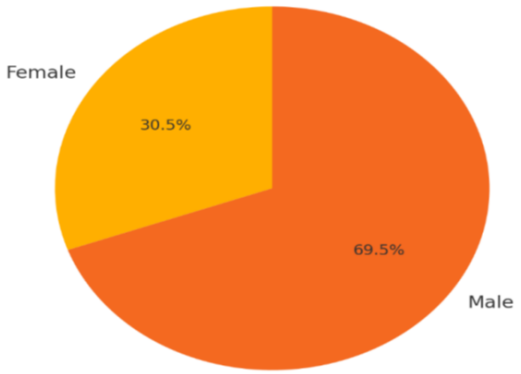

Figure 2. *Gender distribution in the subgroup of road safety*

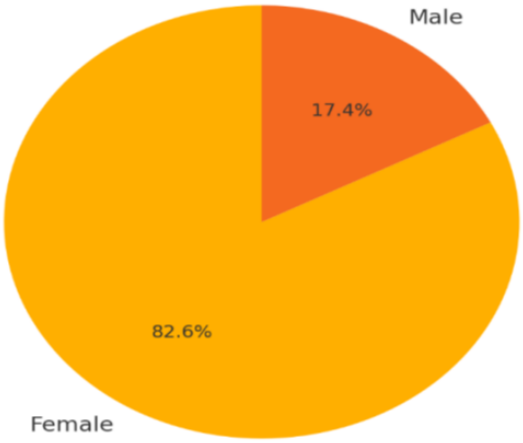

Figure 3. *Gender distribution in the subgroup of family safety.*

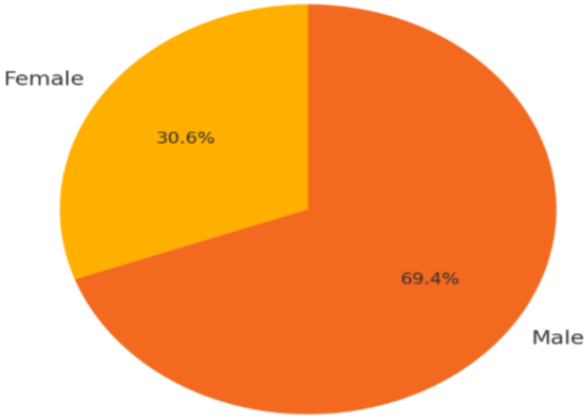

Figure 4. *Gender distribution in the subgroup of workplace safety.*

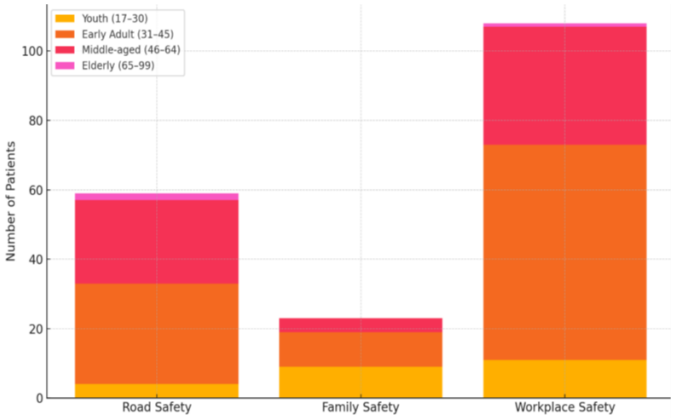

Figure 5. *Age distribution by all therapy subgroups.*

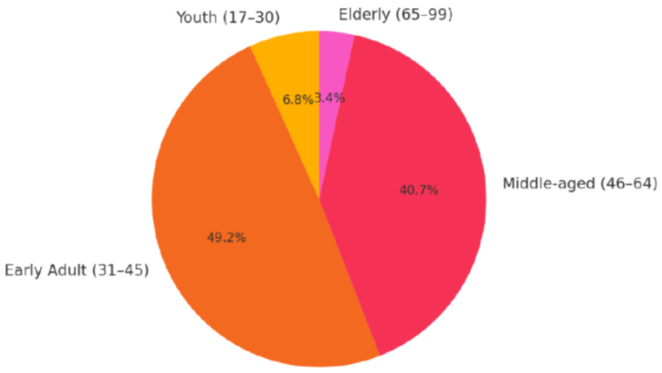

Figure 6. *Age distribution in the subgroup of road safety.*

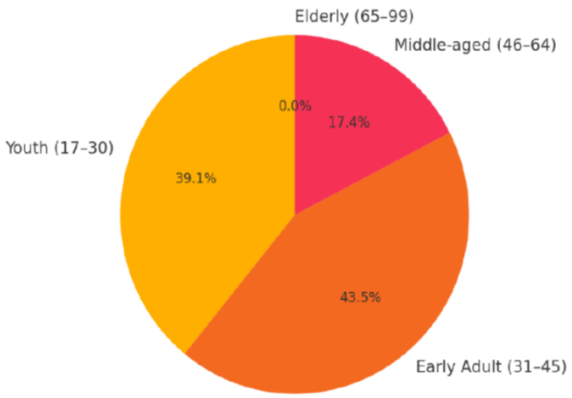

Figure 7. *Age distribution in the subgroup of family safety.*

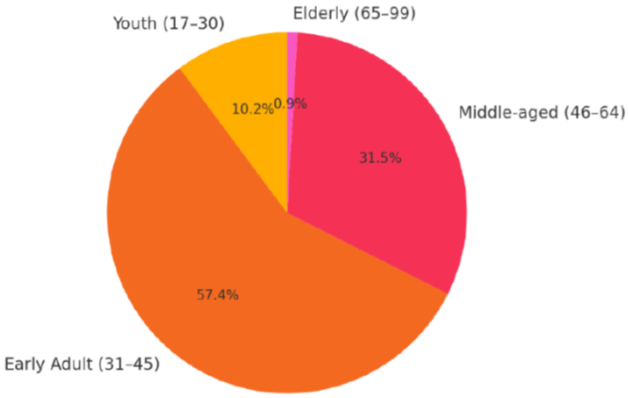

Figure 8. *Age distribution in the subgroup of workplace safety.*

Discussion

This study underscores the multifaceted role of specialist pain clinics in addressing chronic pain and substance dependence and their broader societal implications, particularly in the context of public safety and substance misuse. It corroborates other studies that highlight the critical role of pain clinics in sociology (6). We discovered substantial correlations between the demographic characteristics (gender and age) of patients and the purpose for which substance misuse therapy was pursued by examining demographic patterns across three critical therapy subgroups: road safety, family safety, and workplace safety.

The ethnic composition of our study indicates that the most prevalent populations were White (49%) and South Asian (24.3%). This reflects the White or South Asian ethnicity predominance in our patient population. It may also indicate systemic disparities in access to care or demographic realities. Barriers to referral, engagement, or trust in pain clinic services may be related to the underrepresentation of Arab, Black, and Indigenous patients. We recommend that future research focus on barriers to access for underrepresented groups. Community outreach, interpreter services, and culturally competent care can enhance trust and accessibility across ethnic boundaries. Physicians should proactively leverage clinical outcome data to promote patient care. Such evidence-based management also enhances health workforce morale and productivity (7).

Age was significantly correlated with the purpose of therapy ($\chi^2 = 20.58$, $p = 0.002$). All subgroups were most frequently represented by the early adult group (31–45 years), suggesting that this stage of life is a crucial window for intervention. Intriguingly, the family safety group was overrepresented by youth (17–30 years), which may suggest that individuals with substance use disorders begin parenting at a younger age. In contrast, the underrepresentation of elderly patients in all categories may be related to the underreferral of older adults to therapy services or the unmet needs of this demographic. The relevance and efficacy of interventions may be improved by incorporating age-specific models into therapy, such as parenting skills for younger adults and driving competence assessments for older adults. Additionally, it is imperative to enhance outreach efforts to the elderly population, particularly considering the potential increasing prevalence of opioid use among senior individuals with chronic pain.

Our observations suggest a statistically significant correlation between gender and the purpose of therapy ($\chi^2 = 23.56$, $p < 0.001$). Women were overwhelmingly represented in therapies that addressed family safety and child custody. At the same time, males were significantly more likely to be involved in therapies related to road safety and workplace risk management. These patterns reflect societal gender-based roles and responsibilities. Men are frequently engaged in occupations that involve physical risk or transportation. In contrast, women may be subjected to more intense scrutiny in family court settings regarding their parenting fitness in the context of substance use. Therefore, customized interventions for gender roles may enhance engagement and results. For example, the integration of trauma-informed parenting programs and legal support into treatment plans for women, as well as occupational risk training for males with substance misuse histories, could improve individual recovery and public safety outcomes.

The bar and pie charts underscore the visual contrast in demographic patterns and make a strong policy argument for targeted service design. Pain clinics and policymakers should consider real-world interventions. Indeed, pain clinics should continue expanding into multidisciplinary hubs that address psychological, legal, and occupational dimensions of chronic pain and substance misuse. The societal risk management requires cross-sector collaboration. Close collaboration with family courts, driving authorities, and employers can strengthen referral pathways and support recovery goals aligned with societal safety. Campaigns that reduce the stigma surrounding chronic pain and substance misuse, particularly in workplace and parental contexts, may encourage earlier help-seeking behavior. Monitoring demographics and outcomes will facilitate optimizing interventions and guarantee equitable care provision.

Our study revealed that a substantial number of patients who were undergoing substance misuse therapy, particularly men in the early to middle adult age bracket, were referred for reasons related to workplace safety and risk management. These demographics suggest that individuals at critical stages of their careers, particularly in physically demanding or high-liability roles, are vulnerable to substance-related risks that could compromise organizational safety. The rehabilitation of these individuals is essential for personal health and organizational liability, as they frequently hold safety-sensitive positions. This demonstrates the importance of incorporating substance dependency monitoring and pain management services into enterprise-wide risk management (ERM) frameworks (8,9).

Organizations can enhance their workplace safety culture, reduce accidents, and improve productivity by proactively identifying risks, addressing employee substance use concerns, and appointing a chief risk officer (CRO). The CRO can bridge clinical insights from pain clinics with organizational policies, ensuring proactive management of operational, financial, and workforce health risks. Occupational health aligns with organizational resilience and compliance objectives by incorporating clinical support into ERM strategies (9,10). Integrating pain clinic data into ERM frameworks helps to predict liability exposures, mitigate workplace incidents, and facilitate regulatory compliance. Such integration cultivates a culture of safety and prevention, mitigating the organization's reputational and legal risks. Proactive engagement with clinicians enables tailored interventions, such as fitness-to-work assessments or substance recovery programs. Indeed, the CRO can translate individual health interventions into enterprise-wide resilience and sustainable workforce performance by aligning clinical outcomes with ERM.

Conclusion

This research demonstrates that pain clinics are essential in the promotion of road safety, family well-being, and workplace risk management by providing targeted substance misuse therapy. The results indicate that males are more frequently involved in therapies related to driving and employment, while women are primarily engaged in family or child safety concerns. These demographic patterns are significant. These observations underscore the significance of customizing interventions to the unique characteristics of each patient to enhance societal outcomes. The proactive approach to mitigating risks associated with substance misuse in both public and private sectors is provided by integrating pain clinic services into enterprise-wide risk management (ERM) frameworks. Indeed, a multifaceted, coordinated approach can improve individuals' recuperation, while fortifying the resilience of organizations and public safety.

Conflict of Interest

All the authors declare no conflict of interest.

Acknowledgement

All the authors testify that all persons designated as authors qualify for authorship and have checked the article for plagiarism. All the authors were involved in writing initial and final drafts, proofreading, critical review, and approval of the final article draft.

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