A Behavioral Health Harm Reduction and Preventive Intervention Targeting Chronic Pain Patients at Risk for Opioid Misuse: Study Protocol for a Small-Scale Randomized Clinical Trial

Valerie Hruschak (valerie.hruschak@gmail.com)
Harvard Medical School https://orcid.org/0000-0003-0791-6970
Daniel Rosen
University of Pittsburgh
Megan Tierny
University of Pittsburgh
Shaun Eack
University of Pittsburgh
Ajay D. Wasan
University of Pittsburgh Medical Center
Gerald Cochran
University of Utah

Methodology

Keywords: Chronic pain, opioid misuse, behavioral health, clinical trial, psychosocial

DOI: https://doi.org/10.21203/rs.3.rs-33295/v1

Abstract

Background: The United States is experiencing an interrelated public health crisis, involving the management of chronic pain and the risks associated with opioid misuse. As millions of individuals suffer with chronic pain and as opioid misuse and overdose deaths continue to escalate, the need to advance evidenced-based harm reduction research in this area is critical.

Methods: We developed the Integrated Psychosocial Group Treatment (IPGT) protocol, which is a harm reduction treatment targeting psychosocial factors for chronic pain patients at risk for opioid misuse. The objective of this study is to examine feasibility; acceptability; and preliminary efficacy. Chronic pain patients at risk for opioid misuse (N=30) will be randomized to either IPGT or treatment as usual (TAU). Outcome variables will be collected at pre and post-treatment (6 weeks), in addition to a follow up (9 weeks). We hypothesize that the application of IPGT will cause a reduction in opioid misuse, enhanced knowledge of overdose education and naloxone distribution, and improved pain severity, interference, and pain catastrophizing.

Discussion: This study will provide initial support for IPGT as being acceptable and feasible for delivery in chronic pain patients at risk for opioid misuse in addition to preliminary efficacy. Findings will provide greater insight into strategies that address this health crisis and given the current epidemic in conjunction with the lack of literature, this research is urgently needed. Trial Registration: ClinicalTrials.gov, NCT03648177. Registered 27 August 2018, https://clinicaltrials.gov/ct2/show/NCT03648177

Background

The United States is experiencing an interrelated public health crisis, involving the management of chronic pain and the risks associated with opioid misuse. Opioid misuse includes aberrant drug taking behaviors such as: early refills, taking medications at higher doses or more frequently than prescribed, doctor shopping, and using medications to cope with problems other than pain [1, 2]. Chronic pain and opioid misuse exact a heavy toll on patients, physicians, and society as the annual mean of health care costs for patients who misuse opioids is 8.7 times greater than individuals who do not misuse [3]. According to the Centers for Disease Control and Prevention (CDC), more people die in the United States from opioid related overdosed than from motor vehicle accidents. The opioid epidemic takes roughly 44 lives daily, while a significant amount of individuals develop opioid misuse or addiction [4]. Efforts to identify and treat misuse and opioid use disorder early on are likely to reduce the risk and harm associated with overdose, psychosocial deterioration, transition to injection opioid use, and medical complications [5]. However, a fundamental challenge is to achieve a balance between decreasing the risks of opioid misuse, and associated harms, while optimizing pain care, including the provision of multidisciplinary treatments [6].

At the center of the public health crisis, concerning the management of chronic pain, exists an emphasis for both prevention of opioid misuse and treatment for chronic pain. Chronic pain is widely acknowledged

as a biopsychosocial phenomenon that is multifaceted and emerges from the dynamic interplay of a patient's physiological state, thoughts, emotions, behaviors, and sociocultural influences [7]. The field has made significant progress in the realm of chronic pain management through the applications of biopsychosocial treatments [8]. Although, there has been less advances in preventative approaches targeting chronic pain patients who are at risk for opioid misuse and associated harms such as overdose [9]. Given the interrelated and detrimental impacts of chronic pain and the opioid crisis, it is critical for the field to develop and examine clinical interventions that aim to decrease the risks of opioid misuse, and associated harms, while improving pain care.

Methods

Study Design

This single-center two-group randomized (1:1 ratio) trial will examine the feasibility, acceptability, and preliminary efficacy of IPGT on patients with chronic pain who are at risk for opioid misuse. The study protocol and procedures were approved by the University of Pittsburgh Institutional Review Board for human subject's research. The ClinicalTrials.gov Identifier is NCT03648177. Patients who meet all study criteria for inclusion will be required to provide written informed consent. Following consent and enrollment, participants will complete a baseline assessment and then will be randomly assigned to the Treatment as Usual (TAU) or IPGT study conditions. Outcome variables will be collected at pre and post-treatment (6 weeks), in addition to a follow up (9 weeks) assessment. Figure. 1 depicts the study's CONSORT diagram.

The study's hypotheses include:

1. Feasibility: There will be no difference in the frequency of attrition across experimental group and control group (IPGT vs. TAU) in addition to successful delivery of all intervention components to 75% of IPGT treatment recipients
2. Acceptability: IPGT will demonstrate high levels of intervention satisfaction and retention (75%) at study completion as determined through the completion of a Patient Satisfaction Questionnaire, which will include a 16 item 5-point Likert scale.
3. 3. a) Preliminary efficacy for knowledge on opioid medication, opioid overdose, and opioid overdose response: Chronic pain patients who are at risk for opioid misuse who receive IPGT when compared with those who receive TAU will demonstrate significantly greater improvements in knowledge related to opioid medication, opioid overdose, and overdose response.
4. 3. b) Preliminary efficacy for opioid misuse: Chronic pain patients who are at risk for opioid misuse who receive IPGT when compared with those who receive TAU will demonstrate significant reduction in opioid misuse.
5. 3. c) Preliminary efficacy for pain severity, pain interference, and pain catastrophizing: Chronic pain patients who are at risk for opioid misuse who receive IPGT when compared with those who receive

TAU will demonstrate significantly greater improvements in pain severity, pain interference, and pain catastrophizing.

Study Setting

The study will be conducted at an interdisciplinary outpatient pain clinic, affiliated with an academic medical center in Southwestern Pennsylvania. This clinic provides comprehensive research, clinical, and educational components committed to the evaluation and treatment of the entire range of pain, disability, and rehabilitation concerns. This clinical setting is an exceptional site as it serves the target population for this study and there is a group room in the clinic which is an accommodating setting for the intervention to occur.

Participants and Recruitment Methods

The study is registered with Pitt + Me through the University of Pittsburgh, which is a voluntary database of individuals who have agreed to be contacted to participate in potential research studies. The Registry's software matches participants, based on their demographics,

ICD-9/10 codes, in addition to health preferences, with studies for which they may be eligible

(CTSI, 2018) to participate. Study flyers will also be posted at the study clinic. Prospective participants will be screened by research staff members to determine eligibility and reasons for ineligibility will be collected for purposes of adhering to the Consolidated Standards of Reporting Trials (CONSORT) standards [10]. The patients will be informed that if they are eligible to enroll in the study and that they will be compensated up to $165 for full participation.

Sample Size Justification

Power analyses are often used to determine the sample size needed to offer

statistical power to detect a clinically meaningful difference with the specified inferential

statistical test. However, given that this is a small scale RCT, a pilot sample size is instead based

on the pragmatics of recruitment and the necessities for testing feasibility [11].

Inclusion and Exclusion Criteria

Inclusion and exclusion criteria will be assessed by a combination of self-reported measures and review of medical records. Patients will be included if they (1) have chronic pain for > 3 months' duration, (2) currently prescribed opioid medication, (3) score moderate or high-risk (score of > 4) on the Opioid Risk Tool (ORT). We selected the ORT as opposed to other opioid risk tools due to both the brevity and validity of the instrument [12] (4) English speaking, and ≥ 18 years. Patients will be excluded if they meet any of the following criteria: (1) are receiving active cancer treatment, palliative, and/or end-of-life care as these patients often have unique therapeutic goals, ethical considerations, and typically experience different

intensities of pain and varying sensitivities from cancer related symptoms and from the drugs used within their treatment [13] [14]; (2) are pregnant, given that opioids used in pregnancy can be associated with additional risks to both mother and fetus [15]; (3) have experienced a psychotic and/or manic episode in the last 30 days, due to potential issues regarding follow up with this patient population [16]; psychosis and/or mania will be assessed by the psychosis subscale from the Behavior and Symptom Identification Scale which has demonstrated both reliability and validity [17]; (4) plan to leave the Pittsburgh area for an extended period of time within the next 4 months of enrollment.

Treatment as Usual (TAU)

The control group will receive TAU, which entails any other pharmacologic and non-pharmacologic treatments for chronic pain obtained from their healthcare providers. We will systematically document participants' receipt of TAU in both arms, including medications, pain specialists, physical therapy, psychosocial treatment etc. A TAU control group permits us to estimate retention rates of controls not receiving any active treatment in pain trials, informing the development of an enhanced TAU control in the planned full-scale trial of IPGT.

Integrated Psychosocial Group Treatment (IPGT)

This behavioral intervention blends evidenced based psychosocial treatments for chronic pain and issues pertaining to opioid misuse. The intervention addresses each issue individually and the interconnections between overlapping problems. The IPGT intervention design based on a more recent literature review [18] and then specifically tailored the content to chronic pain patients at risk for opioid misuse. IPGT consists of 6 weekly group sessions of motivational interviewing and behavioral change, self-management, and pain education focused on adherence to treatment and resisting urges to misuse prescription medications. The intervention also entails an education session on overdose education and naloxone distribution.

Format of Group

The IPGT closed group meets once a week for six weeks, with sessions 90 minutes in duration. Table 1. provides a detailed overview of each individual session. The first session is educational, while the remainder of the group will utilize cognitive behavioral therapy, motivational interviewing, mindfulness-based strategies and relaxation techniques while also allowing for emotional and peer support. Topics covered in the remaining five sessions include: pacing and goal setting, negative thinking, coping with stress and anxiety, managing set-backs, treatment adherence, and quality of life. A more comprehensive overview of the session content can be found in Table 1.

Table 1

Psychosocial Components of Integrated Psychosocial Group Treatment

Integrated Psychosocial Group Treatment (IPGT) Session Content	
Treatment Strategies	IPGT uses principles encompassing motivational interviewing, behavioral change, self-management and patient empowerment. The treatment model also employs: • Cognitive behavioral therapy, mindfulness-based strategies, stress reduction and relaxation techniques while also allowing for emotional and peer support • Patient education on chronic pain, mental health, and issues surrounding substance misuse, addiction and treatment adherence
Session 1	¬ The study facilitator welcomes participants, provides an overview of the study, and works on developing group dynamics and therapeutic alliance ¬ The first session is primarily educational and will cover the following topics: •What is pain (acute vs. chronic) •How pain affects the quality of life •Overview of tolerance, physical dependence, and addiction •The continuum of pain, addiction, and pseudoaddiction •Overview of mental health and comorbid chronic pain •The four A's of pain treatment outcomes ¬ The session is closed with a group debrief and goal-setting for the upcoming week
Session 2	¬ The session is started with group check-in and goal-setting ¬ The study facilitator introduces the concept of relaxation techniques and leads the group through a visualization exercise ¬ The remainder of the group is spent on medication adherence, education on overdose and naloxone; participants are afforded the opportunity to ask questions ¬ The session is closed with a group debrief and goalsetting for the upcoming week
Session 3	¬ The session is started with group check-in and goal-setting ¬ The study facilitator introduces the concept of mindfulness and leads the group through a mindfulness exercise ¬ The remainder of the group addresses the topic of "Stages of Change and Pacing Techniques" with a cognitive behavioral approach addressing both issues of chronic pain in addition to issues around medication adherence ¬ The session is closed with a group debrief and goal-setting for the upcoming week

♣

Integrated Psychosocial Group Treatment (IPGT) Session Content	
Session 4	¬ The session is started with group check-in and goal-setting ¬ The study facilitator revisits the concept of relaxation techniques and leads the group through a breathing exercise ¬ The remainder of the group addresses the topic of “Negative Thinking, Fear Avoidance, and Pain Catastrophizing” with a cognitive behavioral approach ¬ The session is closed with a group debrief and goal-setting for the upcoming week
Session 5	¬ The session is started with group check-in and goal-setting ¬ The study facilitator re-visits the concept of relaxation techniques and leads the group through an imagery exercise ¬ The remainder of the group addresses the topic of “Coping with Stress and Anxiety” with a cognitive behavioral approach ¬ The session is closed with a group debrief and goal-setting for the upcoming week
Session 6	¬ The session is started with group check-in and goal-setting ¬ The study facilitator revisits the concept mindfulness techniques and leads the group through a mindfulness exercise ¬ The remainder of the group addresses the topic of “Managing Set-Backs, Treatment Adherence, and Quality of Life” with a cognitive behavioral approach ¬ The session is closed with a group debrief and address ways to continue progress post study participation
♣	

Treatment Fidelity Procedures

To assess treatment fidelity, a master’s level research assistant and master’s level licensed social worker specialized in chronic pain will review all the audiotaped sessions to assess the adherence to the IPGT treatment protocols. Fidelity assessment sheets were created that are based on the contents of each manualized session, which will then be used to indicate whether the components of the session as described in the manual are included in the session. A fidelity score will be computed for each session that represents the percent of essential components of that session that are successfully completed by the interventionist.

Outcome Measures

All outcome measures will be administered by research staff blinded to the intervention assignment. Assessments will be conducted pre- (within 14 days of randomization and beginning treatment), posttreatment (within 2 weeks of completing treatment) and 9 weeks after randomization and post intervention completion.

Feasibility and Acceptability

Primary outcomes will include feasibility and acceptability of IPGT. For the assessment of feasibility, we will track the percentage of patients who receive the 6-session intervention as well as assess the average number of sessions received by the IPGT recipients. We will also capture feasibility by delivery of all intervention component of IPGT recipients. We will examine acceptability of IPGT completion by assessing satisfaction with a 16-question patient satisfaction questionnaire which will assess topics such as: length and frequency of sessions, increased knowledge, cultural competence, value of patient manual, experience of facilitator, effectiveness of peer support. Acceptability will also be assessed by tracking retention of IPGT recipients at the completion of the study and qualitative feedback will also be collected during the patient satisfaction survey and will examine the participants experience with IPGT.

Preliminary Efficacy

There are various preliminary efficacy outcome measures which will assess opioid misuse behaviors, increased knowledge of opioid medications and overdose response, pain severity and interference, and pain catastrophizing.

Opioid Misuse and Knowledge of Opioid Medication and Overdose Response

The Prescription Opioid Misuse Index (POMI) will evaluate if the participant is engaging in aberrant drug taking behavior (doctor shopping, taking medication at higher doses or more frequently than prescribed, and coping with personal issues) [1] and it has demonstrated both validity and reliability [1]. The Drug Abuse Screening Test-10 (DAST-10) will be used for assessing severity of any drug use and has demonstrated clinical validity [19–21]. The Brief Opioid Overdose Knowledge (BOOK) Questionnaire will assess knowledge on overdose and naloxone distribution. The BOOK is a 3-factor scale, representing opioid knowledge (4 items), opioid overdose knowledge (4 items), and opioid overdose response knowledge (4 items). The questionnaire has demonstrated validity [25].

Pain Measures

The Brief Pain Inventory Short Form (BPI) will assess pain severity and interference. The BPI is one of the most commonly used questionnaire to examine severity of pain and the impact of pain on daily functions. The BPI has excellent test-retest reliability, construct validity, and criterion validity [22–24]. The Pain Catastrophizing Scale (PCS) assesses three components of catastrophizing: rumination, magnification, and helplessness. The PCS is a 13-item instrument that has demonstrated both validity and reliability [24, 25].

Behavioral Health and Demographic Characteristics

We will use various standardized mental health and substance use measures to assess differences in patient characteristics at baseline. Depression and anxiety will measure by the Hospital Anxiety and Depression Screen (HADS). The questionnaire is comprised of seven questions which assess anxiety and seven questions which examine depression. HADS has demonstrated both reliability and validity [26]. Post-Traumatic Stress Disorder (PTSD) will be captured with the Primary Care PTSD Screen for DSM-5

(PC-PTSD-5). The PC-PTSD-5 is a five-item measure that reflects the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) PTSD diagnostic criteria and has demonstrated validity [27]. Lastly, we will capture demographic characteristics including: age, gender, marital status, race and ethnicity, education, and employment status.

Analyses

All study analyses will be intent-to-treat. As an initial step, we will compare baseline characteristics of the treatment groups using Fisher's Exact or Wilcoxon-Mann-Whitney tests in order to determine if there are significant baseline differences despite the randomization.

Feasibility an Acceptability Analyses

To examine feasibility, successful delivery of all intervention components to 75% of IPGT recipients will be analyzed by conducting chi-squares; the frequency of withdrawal will be compared between groups (IPGT vs. TAU). Feasibility will further be analyzed by calculating the total number of participants who completed all 6 IPGT sessions divided by total number of IPGT participants. Acceptability will be examined through the application of a Patient Satisfaction Questionnaire, which will include a 16 item 5-point Likert scale. Means and standard deviations will be calculated for each of the questions and delivery of all intervention components to 75% of IPGT recipients will be analyzed by calculating number of recipients retained at 6 weeks divided by number of consented recipients.

Preliminary Efficacy Analyses

We will conduct a descriptive analysis of frequencies, measures of central tendency, and dispersion to examine our acceptability and feasibility outcomes. We also will assess for imbalances in groups including descriptive statistical measures of participant demographic and health characteristics. A priori intent-to-treat analysis of the longitudinal data using linear mixed models will be conducted. Models of longitudinal change will follow the mixed model procedure described by Singer and Willett [28]. We will build 3 separate models for each dependent variable: pain severity, pain interference, and pain catastrophizing. Baseline, post-treatment (6 weeks), and follow up (9 weeks) values will be the three time points used and time will be considered as a numerical value with effect assumed to be linear. The time by treatment interaction will represent the treatment effect. We will adjust variables that are significantly different between IPGT and TAU.

Discussion

At the center of the opioid public health crisis, and specifically concerning the management of chronic pain, there exists an emphasis for prevention and harms associated with opioid misuse, in addition to the treatment of chronic pain. This study reflects an essential development within the field and will demonstrate feasibility, acceptability, and preliminary efficacy for a harm reduction treatment for chronic pain patients at risk for opioid misuse. The results from this study will serve as the foundation needed for future research in order to broadly establish this treatment model.

More recently, there has been a heightened need to better understand the scale of the opioid epidemic and to further implement various harm reduction and risk mitigation strategies. The field has made significant advances in the management of chronic pain through the applications of biopsychosocial treatments [8]. However, with the deleterious effects of the opioid epidemic, there has been less progress in preventative approaches. The aim of prevention should be to screen patients who are at risk for opioid misuse before it causes serious complications. Ideally, prevention strategies should focus on averting new cases of opioid misuse, the identification of early cases of opioid use disorder, and to ensure access to effective pain management and addiction treatment [29]. Efforts to identify and treat misuse and opioid use disorder early on are likely to reduce the risk of overdose, psychosocial deterioration, transition to injection opioid use, and other medical complications [5].

Given the pressing need for behavioral health research for chronic pain patients who are at risk for opioid misuse, approaching this issue upstream will not only help reverse the opioid crisis but also enhance pain outcomes [30]. Thus, we are conducting a pilot randomized controlled trial to further investigate the IPGT model for this patient population. This study will serve as pilot data to help fill this research gap and contribute to the literature on non-pharmacological and behavioral approaches for chronic pain patients at risk for opioid misuse.

IPGT offers a holistic approach that teaches various pain coping strategies, encourages medication adherence, and lifestyle changes such as: stretching, walking, pacing activity, nutrition changes, improving sleep hygiene and addressing relationship problems. It is our hypothesis that providing high-risk chronic pain patients with assertive resources such as the IPGT intervention which encourages healthy responses to pain, may potentially decrease or eliminate maladaptive coping including pain catastrophizing, pain interference and other distressing behaviors. To the authors' knowledge, a behavioral intervention and risk reduction model that incorporates overdose education and training on naloxone administration has not been tested within chronic pain patients who are at risk for opioid misuse. This pilot project is a necessary first step in exploring this novel intervention in which the study results will help to inform preliminary efficacy and both feasibility and acceptability, which is instructive in that it points to modifications needed in the planning and design of a larger efficacy trial.

Limitations

There are many promising aspects of this study, including its randomized design and the integrated model of care for chronic pain patients at risk for opioid misuse. However, this study possesses limitations that must be considered when interpreting its findings. Given the scope of this pilot study and limited resources, the sample size is relatively small and not powered to detect efficacy. An additional limitation is the use of self-report measures to assess the various behavioral health and pain outcomes, including opioid misuse. Future research following the completion of this pilot must seek to expand the number of patients recruited and randomized into the study. Participants of this study were recruited by convenience from Pittsburgh, thus our findings are limited in that they may not be generalizable to the broader population of individuals within the US or other countries.

Conclusion

This study depicts an essential development of a robust response to the interrelated crisis of the management of chronic pain and the opioid epidemic. This single-blinded randomized clinical trial incorporates a comprehensive approach that blends evidence based psychosocial treatments for chronic pain and utilizes a harm reduction and preventative approach for issues pertaining to opioid misuse and overdose. The findings from this study will offer necessary foundational data that will support a larger multisite clinical trial to test this intervention as a novel treatment for chronic pain patients at risk for opioid misuse while providing greater insight into strategies to address this public health crisis.

Abbreviations

IPGT: Integrated Psychosocial Group Treatment; TAU: Treatment as Usual; CDC: Centers for Disease Control and Prevention; ORT; Opioid Risk Tool; POMI: Prescription Opioid Misuse Index; DAST-10; Drug Abuse Screening Test-10; BOOK; Brief Opioid Overdose Knowledge; BPI: Brief Pain Inventory Short Form; PCS: Pain Catastrophizing Scale; HADS: Hospital Anxiety and Depression Screen; PTSD: Post Traumatic Stress Disorder; PC-PTS-5: Primary Care PTSD Screen for DSM-5; RCT: Randomized control trial.

Declarations

Ethics Approval and Consent to Participate

The University of Pittsburgh Institutional Review Board for human subject's research approved the study protocol (PRO18040067) on 2 October, 2018. We obtained informed consent from all participants we enroll in the trial. Any major protocol changes will be submitted to the University of Pittsburgh Institutional Review Board for human subject's research for approval; approved changes will be documented and communicated to study investigators, the Sponsor (Staunton Farm Foundation), and any other appropriate candidates. The trial registry will also be updated if indicated by such changes.

Consent for Publication

Not applicable.

Availability of Data and Materials

The corresponding author has access to the final trial dataset and a de-identified dataset used in the trial's analyses will be available from the corresponding author on reasonable request. The authors will also select a data repository for eventual data sharing after completion of the trial and initial publications.

Competing interests

The authors declare that they have no competing interests.

Funding

This work was supported by a research grant from Staunton Farm Foundation (https://www.stauntonfarm.org/).

Authors' Contributions

VH, GC, and ADW designed the trial, including developing the specific aims and hypotheses. VH adapted the IPGT treatment materials. VH, DR, SE, GC, and ADW refine the study protocol and statistical analyses plan. All authors drafted, edited, and approved the final manuscript. GC and ADW contributed equally to the manuscript and are co-senior authors.

Acknowledgements

The UPMC Pain Medicine Program helped with patient recruitment and was the site for the study intervention.

References

1. Knisely JS, et al. Prescription Opioid Misuse Index: a brief questionnaire to assess misuse. Journal of substance abuse treatment. 2008;35(4):380–6.
2. Sullivan MD, et al. Risks for possible and probable opioid misuse among recipients of chronic opioid therapy in commercial and medicaid insurance plans: The TROUP Study. Pain. 2010;150(2):332–9.
3. Ruetsch C. Empirical view of opioid dependence. Journal of Managed Care Pharmacy. 2010;16(1):9–13.
4. Dowell D, Haegerich TM, Chou R, *CDC guideline for prescribing opioids for chronic pain—United States*, 2016. Jama, 2016. **315**(15): p. 1624–1645.
5. Kolodny A, et al. The prescription opioid and heroin crisis: a public health approach to an epidemic of addiction. Annu Rev Public Health. 2015;36:559–74.
6. Lavigne GJ, *Prevention of opioid misuse: a summary with suggestions from a pain working group.* Pain Research and Management, 2016. **2016**.
7. Roditi D, Robinson ME. The role of psychological interventions in the management of patients with chronic pain. Psychology research behavior management. 2011;4:41.
8. Gatchel RJ, et al. The biopsychosocial approach to chronic pain: scientific advances and future directions. Psychological bulletin. 2007;133(4):581.

9. Lavigne GJ, *Prevention of Opioid Misuse: A Summary with Suggestions from a Pain Working Group.* Pain Research and Management, 2016. **2016**: p. 1–6.
10. Schulz KF, et al. CONSORT 2010 Statement: updated guidelines for reporting parallel group randomised trials. BMJ. 2010;340(7748):698–702.
11. Leon AC, Davis LL, Kraemer HC. The role and interpretation of pilot studies in clinical research. J Psychiatr Res. 2010;45(5):626–9.
12. Webster LR, Webster RM. Predicting Aberrant Behaviors in Opioid-Treated Patients: Preliminary Validation of the Opioid Risk Tool. Pain Med. 2005;6(6):432–42.
13. Fayers PM, et al. The dimensionality of pain: Palliative care and chronic pain patients differ in their reports of pain intensity and pain interference. Pain. 2011;152(7):1608–20.
14. Nersesyan H, Slavin KV. Current aproach to cancer pain management: Availability and implications of different treatment options. Ther Clin Risk Manag. 2007;3(3):381–400.
15. Broussard CSP, et al. Maternal treatment with opioid analgesics and risk for birth defects. Am J Obstet Gynecol. 2011;204(4):314. .e1-314.e11..
16. Gentile JP, Niemann P. Supportive psychotherapy for a patient with psychosis: schizophreniform disorder. Psychiatry (Edgmont (Pa: Township)). 2006;3(1):56.
17. Eisen SV, et al. The Revised Behavior and Symptom Identification Scale (BASIS-R): Reliability and Validity. Med Care. 2004;42(12):1230–41.
18. Hruschak V, Cochran G, Wasan AD, *Psychosocial interventions for chronic pain and comorbid opioid misuse: a narrative review of the literature.* Journal of Opioid Management, 2018. (**In Press**).
19. Yudko E, Lozhkina O, Fouts A. A comprehensive review of the psychometric properties of the Drug Abuse Screening Test. Journal of substance abuse treatment. 2007;32(2):189–98.
20. Villalobos-Gallegos L, et al. Psychometric and diagnostic properties of the Drug Abuse Screening Test (DAST): Comparing the DAST-20 vs. the DAST-10. Salud Mental. 2015;38(2):89–94.
21. Bohn M, Babor T, Kranzler H. Validity of the Drug Abuse Screening Test (DAST-10) in inpatient substance abusers. Problems of drug dependence. 1991;119:233–5.
22. Erdemoglu A, Koc R. Brief Pain Inventory score identifying and discriminating neuropathic and nociceptive pain. Acta Neurol Scand. 2013;128(5):351–8.
23. Keller S, et al. Validity of the brief pain inventory for use in documenting the outcomes of patients with noncancer pain. Clin J Pain. 2004;20(5):309–18.
24. Tan G, et al. Validation of the Brief Pain Inventory for chronic nonmalignant pain. The Journal of Pain. 2004;5(2):133–7.
25. Sullivan MJ, Bishop SR, Pivik J. The pain catastrophizing scale: development and validation. Psychol Assess. 1995;7(4):524.
26. Norton S, et al. The Hospital Anxiety and Depression Scale: A meta confirmatory factor analysis. J Psychosom Res. 2012;74(1):74–81.

27. van Dam DMS, et al. Screening for posttraumatic stress disorder in civilian substance use disorder patients: Cross-validation of the Jellinek-PTSD screening questionnaire. J Subst Abuse Treat. 2013;44(1):126–31.
28. Singer JD, Willett JB, Willett JB, *Applied longitudinal data analysis: Modeling change and event occurrence*. 2003: Oxford university press.
29. Worley SL. *New Directions in the Treatment of Chronic Pain: National Pain Strategy Will Guide Prevention, Management, and Research*. P & T: a peer-reviewed journal for formulary management, 2016. 41(2): p. 107.
30. Volkow ND, Collins FS. The role of science in addressing the opioid crisis. N Engl J Med. 2017;377(4):391–4.

Figures

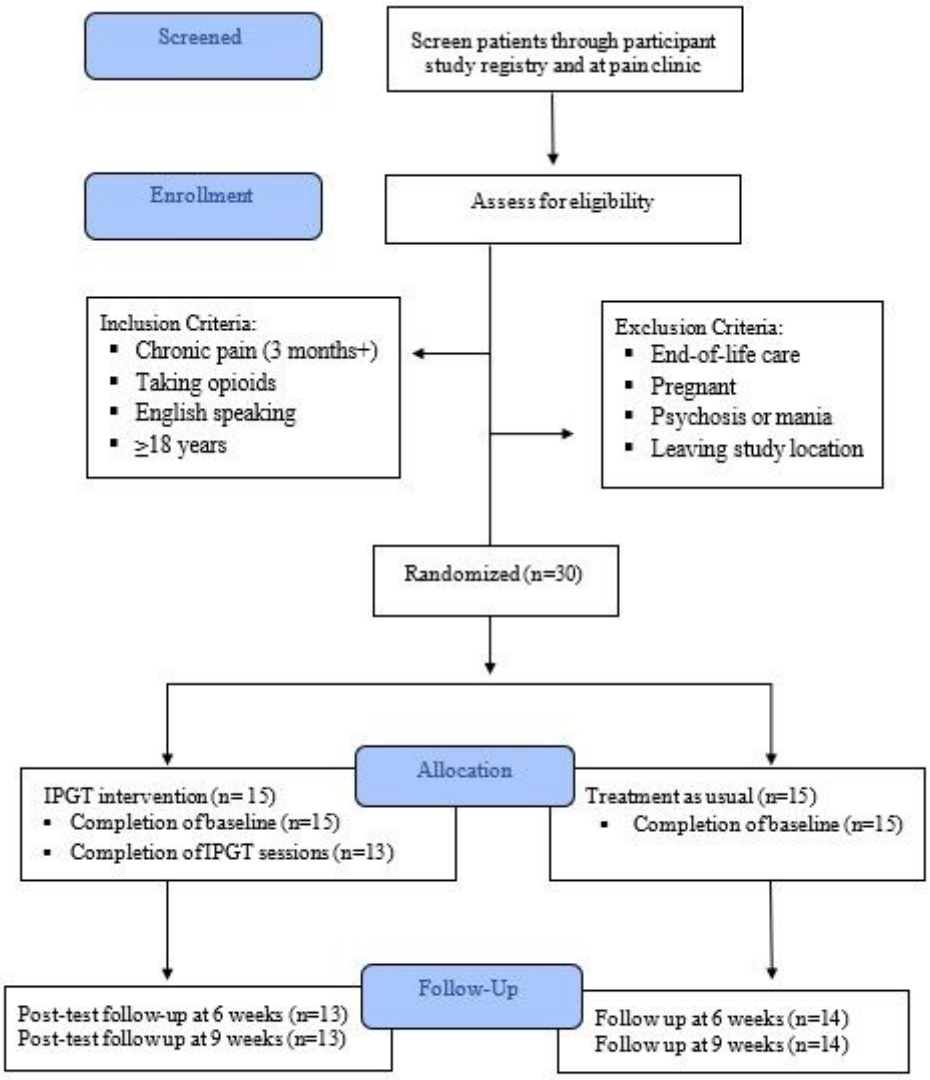

Figure 1

CONSORT Diagram

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- supplement1.doc