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Tiffany Ruan

Troy B. Puga

Jason Onwenu

Tafadzwa Amani

Robert Tyler

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Original Article

Patients Perceptions of Opioid Use for Chronic Lower Back Pain in Rural Guatemala

Tiffany Ruan[1], Troy Brian Puga[1], Jason Onwenu[1], Tafadzwa Amani[1], Robert Tyler[2]
[1]College of Osteopathic Medicine, Kansas City University, Kansas City, Missouri, USA
[2]Department of Osteopathic Manipulative Medicine, College of Osteopathic Medicine, Kansas City University, Kansas City, Missouri, USA

Correspondence:
Tiffany Ruan
College of Osteopathic Medicine
Kansas City University
1750 Independence Ave
Kansas City, MO 64106, USA
Email: tiffany.ruan@kansascity.edu
Phone: 312-730-3643

ABSTRACT

Background: Chronic lower back pain is a common cause of disability. Opioids, although not first-line treatment, are often prescribed for chronic lower back pain. The purpose of this study is to understand the perceptions of opioids among the rural Guatemalan population for chronic low back pain to best optimize a shared decision-making process in pain management.
Methods: Participants were given a survey regarding demographic information, whether they were offered an opioid prescription for chronic lower back pain, and whether they would take the medication if offered. Participants completed the Prescription Opioid Overdose Knowledge Score (Rx-OOKS) questionnaire, to evaluate knowledge of opioid overdose.
Result: The survey results showed that 93.3% of participants were never offered an opioid prescription for chronic low back pain by a provider in Guatemala. However, a majority would have taken an opioid if given the opportunity. Scores on the Rx-OOKS revealed a statistically significant lower mean ($p < 0.05$) than the United States' study baseline for the knowledge of signs of prescription opioid overdose construct, actions to take in the opioid overdose construct, and total score construct.
Conclusion: This research study was able to show that although there is a low prevalence of opioid use in rural Guatemala and decreased knowledge of opioid overdose. Thus, physicians and other healthcare providers must do their due diligence to educate their communities about opioid use, opioid overdose, and naloxone use for a potential overdose. This process is essential in the development of a shared decision-making process for pain management.

Keywords: Chronic lower back pain, opioid use, rural Guatemala, global health, orthopedics, psychiatry

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INTRODUCTION

Pain is rapidly becoming a global health crisis, and public health interventions for pain have been scarce across the globe.[1,2] Low back pain, in particular, is one of the largest complaints of pain across the world and can affect a wide range of age groups.[3,4,5] It has been shown that at some point in an individual's life, around 80% of adults will experience low back pain.[6,7] Low back pain is the number one global cause of disability and years of living with disability.[3,4] Chronic low back pain can be debilitating and can lead to loss of employment, loss of self-care, and depression.[8,9,10] In addition to affecting individuals, low back pain places significant financial and resource strain on many countries' healthcare systems across the globe, with costs that can exceed billions of dollars annually.[11,12,13]

Diagnosis and management of low back pain is a major challenge for healthcare providers across the globe.[14,15] Although not considered a first-line treatment, low back pain is one of the most common reasons for an opioid prescription.[16] A major concern regarding the usage of opioids for chronic low back pain is the potential for opioid addiction and overdose.[16,17] A previous study showed that roughly 20% of patients presenting to a doctor's office with non-cancer pain symptoms or pain-related diagnoses receive an opioid prescription.[18] Opioid prescriptions are a major concern, as the world has been dealing with an opioid crisis since the 1990s.[19] Since low back pain is one of the most common reasons for an opioid prescription, the study was conducted to evaluate the prevalence of opioid use as well as the knowledge of opioid use and overdose in rural Guatemala and to evaluate the potential for abuse in such a setting.[16]

Although the opioid epidemic first began in the 1990s, an increasing number of people are still losing their lives to opioid overdoses across the globe.[19] The opioid crisis has taken

many lives and impacted many families since it began.[20] While the short-term prescribing of opioid medications has decreased in recent years, long-term prescribing has increased in the United States.[21] In recent years, there have been many successful interventions to decrease the rates of opioid prescriptions among providers.[22,23] However, opioid abuse remains high among many countries across the globe and will remain a significant challenge for healthcare professionals for years to come.[24,25]

A recent study found that although the rates of opioid prescriptions in Guatemala have increased over the years, the rates of opioid overdoses and deaths are not as high as the rates in the United States.[26] It is believed that Guatemala's low opioid overdoses and deaths are accounted for by the country's restrictive regulations, lack of training and education in pain management, and the limited availability of morphine.[26] In Guatemala, the current system requires a physician to use a special prescription pad and patients must obtain a stamp to validate the prescription before a pharmacy can dispense the medication, which makes it more difficult for patients to obtain opioid medications.[26] In Guatemala, there are only 50 to 60 out of 14,000 physicians who have special prescription pads allowed to prescribe opioids, all of whom work in Guatemala City.[26] While Guatemala remains one of the countries with low opioid use, research regarding opioid abuse and the potential for opioid abuse is scarce.[27] With the rising numbers of prescribed opioids in Guatemala, research is necessary to understand knowledge and perceptions of opioids, particularly in underserved rural populations.

A study in *Future Medicine* evaluated Latin-American guidelines for opioid use in chronic nononcologic pain, including low back pain.[28] The study concluded that although the rates of opioid prescriptions in Guatemala are increasing, patients are often improperly treated for pain due to physicians' "opiophobia." The fear and lack of prescribing opioids can be attributed to limited availability and accessibility to opioids, fear of the rational use of opioids, and a lack of education in pre- and post-graduate medical education. Thus, it is important to develop clear guidelines to contribute to the improvement of the quality of life of patients.

The purpose of this study is to understand the perceptions of opioids among the rural Guatemalan population for chronic low back pain, and to help physicians and patients optimally engage in a shared decision-making process for pain control in rural populations. The second purpose is to compare the use of opioids for chronic lower back pain and evaluate any differences in knowledge about opioid overdose between the United States and rural Guatemala. Examining if knowledge differences exist will help understand potential gaps and reasons for patient opioid and opioid overdose perceptions. We hypothesize that those living in rural Guatemala with low back pain will have less usage of opioids, less access to opioids, and decreased knowledge regarding opioid overdose and treatment

METHODS

Study Design

This study was a cross-sectional study. This research was approved by Kansas City University's Institutional Review Board The study was completed over eight days in rural Guatemala in the following order: Tecpan Guatemala, San Pedro Yepocapa, Patzun, Chilmaltenango Centro, Santa Cruz Balanya, Chimaltenango Alameda, San Juan Alotenango, and Santa Catarina Barahona. All participants who met the criteria for chronic lower back pain according to the American Academy of Orthopaedic Surgeons (AAOS) (dull and achy, sharp and stabbing, improvement of low back pain when reclining or lying down, pain that worsens with bending and lifting, sitting, or standing and walking, pain that extends from the back into the buttocks or outer hip areas, weakness in their legs, or loss of bladder and bowel control) were provided with a consent recruitment statement in English and Spanish to obtain their verbal consent prior to being involved in any research activity.[29,]

Participants who verbally consented to participate in the survey study were given a survey to complete demographic data (age, gender, education, socioeconomic status) and to determine whether or not they were offered an opioid prescription for their chronic lower back pain from any doctors in Guatemala (Supplementary file 1). The survey also asked whether or not the participants would take the opioid medication if offered (Supplementary file 2).

After the completion of the survey, each participant completed the Prescription Opioid Overdose Knowledge Score (Rx-OOKS) questionnaire evaluating their knowledge of opioid overdose and naloxone (Supplementary file 3). The Rx-OOKS questionnaire was piloted and evaluated in a 2020 study published by the Journal of Pain Medicine to quantify the knowledge about prescription opioid overdose.[30] The Rx-OOKS is a valid adaptation of the Opioid Overdose Knowledge Score questionnaire, a valid opioid knowledge scale that has been used to assess opioid knowledge in other populations.[30,31]

Following the completion of the survey and questionnaire, each participant received the standard of care for their chief complaint. No interventions were performed for this research study as it is a baseline for perceptions of opioid use for low back pain. The surveys were tallied and analyzed to note any differences in the use of opioids in America and rural Guatemala and evaluate any knowledge differences about opioid overdose between residents of the United States and rural Guatemala.

Data Analysis

Survey data was compiled, and descriptive statistics were used to analyze the demographic and survey data. The Rx-OOKS questionnaire scores (signs of prescription opioid overdose, actions to take in prescription opioid overdose, naloxone use knowledge, and total construct score) were analyzed for statistical analysis through a comparison of the questionnaire data to the original study baseline mean score using a one-sample t-test.

RESULT

This study included 45 participants. Demographic data revealed that the study had a diverse age range with 22.2% of the study aged 65+, 15.6% aged 55-64, 20.0% aged 45-54,15.6% aged 35-44, 22.2% aged 25-34, and 4.4% aged 18-24. The study was 80.0% female and 20.0% male. Additionally, 44.4% of participants had a lower than high school education completed, 35.6% with a high school degree, 11.1% with some college, and 8.9% with a college degree. Examination of socioeconomic status revealed that 28.9% were unemployed, 31.1% made less than 13.9 Guatemalan quetzales per day, 17.8% made 13.9-24 Guatemalan quetzales per day, and 22.2% made more than 24 Guatemalan quetzales per day.

Survey data revealed that 93.3% of participants in our study were never offered an opioid prescription for chronic lower back pain by a provider in Guatemala. Of those 93.3% of participants who were never offered an opioid prescription, a majority would have taken an opioid if given the opportunity.

Furthermore, 6.7% of the study participants were offered a prescription for chronic opioid use by a provider in Guatemala. Of the 6.7% offered an opioid prescription, two of the study participants were offered one refill, and one participant was offered no refills. Two refills were offered by a doctor, and one refill was offered by a nurse (Table 1).

Table 1. Demographics and survey data of the 45 participants who filled out a survey on opioid use and a questionnaire on opioid and naloxone knowledge in rural Guatemala.

Survey & Demographics Table	
	number (%)
Age	n=45
18-24	2 (4.4)
25-34	10 (22.2)
35-44	7 (15.6)
45-54	9 (20.0)
55-64	7 (15.6)
65+	10 (22.2)
Gender	
Male	9 (20.0)
Female	36 (80.0)
Non-Binary	0 (0.0)
Education Level	
No High School Degree	20 (44.4)
High School Degree	16 (35.6)
Some College	5 (11.1)
College Degree	4 (8.9)
Graduate/Doctoral	0 (0.0)
Socioeconomic Status	
< 13.9 in Guatemalan quetzal per day	14 (31.1)
13.9-24 in Guatemalan quetzal per day	8 (17.8)
> 24 in Guatemalan quetzal per day	10 (22.2)
Unemployed	13 (28.9)
Were you ever offered an opioid prescription for your chronic back pain from any healthcare provider in Guatemala?	
Yes	3 (6.7)
No	42 (93.3)
If no, would you take opioids if offered?	
Yes	27 (60.0)
No	15 (33.3)
If yes, how many refills were offered to you?	
0	1 (2.2)
1	2 (4.4)
2	0 (0.0)
3	0 (0.0)
4	0 (0.0)
5(+)	0 (0.0)
If yes, how many refills were offered to you?	
Doctor	2 (4.4)
Nurse	1 (2.2)

Participant scores on the Rx-OOKS were analyzed for statistical significance. In the knowledge of signs of prescription opioid overdose construct, participants had a mean score of 2.18 (SD 2.25) questions answered correctly with 19 participants not answering any questions correctly out of a possible 10 questions (Figure 1). When the signs of prescription opioid overdose construct mean score was compared to the original study mean score of 4.71, it produced a statistically significant result ($p < 0.001$).[30]

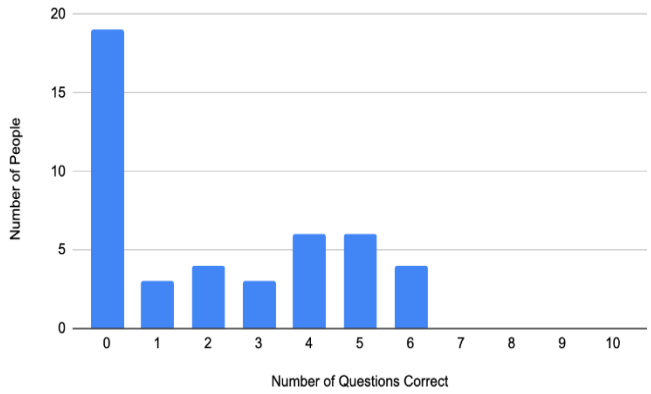

Figure 1. Forty-five participants answered 10 questions on signs of opioid overdose.

In the actions to take in opioid overdose construct, participants had a mean score of 1.98. (SD 1.79) questions answered correctly with 17 participants not answering any questions correctly out of a possible seven questions (Figure 2). The actions to take in opioid overdose construct mean score was compared to the original study mean score of 5.09, which produced a statistically significant result ($p < 0.001$). [30]

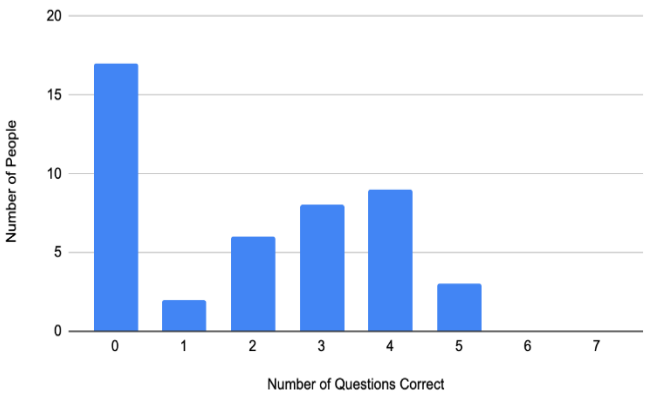

Figure 2. Forty-five participants answered seven questions on actions to take in an opioid overdose.

In the naloxone use knowledge construct, participants had a mean score of 0.93 (SD 1.29) questions answered correctly with 27 participants not answering any questions correctly out of a possible eight questions (Figure 3). When the naloxone use knowledge construct mean score was compared to the original study mean score of 1.05, it did not produce a statistically significant result ($p= 0.55$).[30]

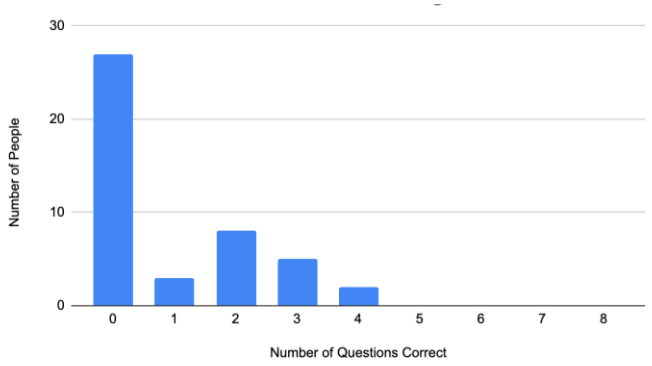

Figure 3. Forty-five participants answered eight questions on the knowledge of naloxone use.

Participants in this study had a total score construct mean score of 5.07 (SD 4.39). When compared to the original study total score mean score of 10.86, it produced a statistically significant result ($p < 0.001$).[29]

DISCUSSION

The results of our study showed that in rural Guatemala, patients were rarely offered an opioid prescription for their chronic lower back pain. However, a majority of participants would have used an opioid if they were offered the prescription. Results of the Rx-OOKS questionnaire showed that the participants had a statistically significant lower mean score on the total score construct, the knowledge of signs of prescription opioid overdose construct, and the actions to take in the opioid overdose construct when compared to the original baseline means of the original study in the United States.[30] There was no statistical significance noted in regard to the naloxone use knowledge construct between this study and the original baseline mean of the United States' study.[30]

The low prescribing numbers of opioids in our study are most likely suggestive that it is harder to get an opioid prescription in rural Guatemala than in the United States. Guatemala remains one of the lowest opioid-prescribing countries in the entire world. However, there persist opioid overdoses even in low-prescribing countries.[26] Much of the low prescribing for rural Guatemalans is likely due to limited access, with most providers prescribing opioids residing in urban Guatemala City, Guatemala.[26] There are likely many patients who have decreased access to healthcare in rural Guatemala, which would be consistent with rural populations across the globe.[32,33] An additional consideration is that many rural populations may avoid the traditional medical system due to reasons such as cultural norms or past experiences.[34] The combination of factors is most likely why there are less prescribing of opioid prescriptions and harder for rural Guatemalan patients to get opioid prescriptions when compared to the United States.

While the prescription of opioids is low within the rural Guatemalan population, a majority would have taken an opioid if prescribed one for their chronic low back pain. This could potentially mean that many patients' chronic lower back pain may not be controlled, which could translate to increased rates of depression and a decreased quality of various aspects of life (e.g., social, occupational, emotional, sexual, and personal).[35] While opioids are not the first-line treatment for chronic lower back pain, it may mean that current pain regimens are not optimized for controlling patients' lower back pain. Studies state that the primary obstacles to proper pain management in Latin America are three-fold: (1) lack of physician training in the pharmacology, proper usage, benefits, and adverse effects of opioids (also known as opio-ignorance), (2) lack of education of pharmacists and patients, and (3) lack of robust epidemiology on chronic pain to emphasize its importance as a major public health issue to policy-makers.[28,35] While there is no clear aim to increase opioid prescribing in Guatemala, understanding patients' perceptions and beliefs is essential in a shared decision-making model for pain control, particularly if first-line treatments do not adequately control pain. The shared decision-making model has been shown to improve patient satisfaction in pain management.[36]

Another component of the lack of pain control could potentially relate to the decreased access to healthcare that many patients living in rural populations experience.[32,33] In rural populations across the globe, access to care is often limited and travel is often far for doctor's appointments.[32,33,37] With these factors, patients may not be able to see providers who can adjust the pain regimens to optimize patients' pain control which is why shared decision-making is critical. In addition, there may be limited treatment options when compared to the United States. Direct and indirect costs are often high for chronic lower back pain.[38] With most of our patients making less than 13.9 in Guatemalan quetzales per day or unemployed, the treatment options may be limited due to costs. The costs and access to care are likely significant reasons why many patients may not have optimized pain control regimens.

An important component of this study was to assess patient knowledge regarding opioid overdoses and the actions regarding opioid overdoses. The results of the Rx-OOKS showed that rural Guatemalans had decreased knowledge regarding the knowledge of signs of an opioid overdose and the actions to take in the event of an opioid overdose when compared with patients in the United States.[30] Knowledge differences could persist for a number of reasons. One potential reason is that there is less opioid education given by providers and community health partners. Another potential reason is that there is less prescribing of opioids, and there is less concern and potential for opioid overdose. Interventions in Guatemala should ultimately target increasing patient knowledge of opioid overdose signs and actions to take. Naloxone training is another potential intervention that could help save many lives.[39]

Our study showed that there is less knowledge about opioid overdose, particularly in identifying the signs of opioid overdose (Guatemala: $M = 2.18$, $SD = 2.25$; USA: $M = 4.71$, $p < 0.001$) and being familiar with what actions to take in an overdose event (Guatemala: $M = 1.98$, $SD = 1.79$; USA: $M = 5.09$, $p < 0.001$), and less access to receiving prescription opioids in rural Guatemala when compared with the United States.[30]

The opioid prescription landscape in Guatemala is different from that of the United States due to several factors influencing opioid utilization and access to pain management. Guatemala has stringent drug regulations that make it difficult for healthcare professionals and patients to access opioids for pain management. These regulations include requirements for special prescription pads, multiple forms, and validation stamps, which add to the administrative burden for healthcare workers and drug control authorities.[27,40] Additionally, limited education in pain management for healthcare providers contributes to restricted pain relief access, with few undergraduate programs and medical schools addressing palliative care and pain management.[27,41] Lack of access to opioids adds to the difference; for example, the availability of morphine in Guatemala is confined to national hospitals in the capital, whereas independent pharmacies rarely stock opioids, disproportionately affecting rural populations.[40,41]

In contrast, the United States has experienced a shift towards cautious opioid prescribing due to an opioid epidemic, with guidelines emphasizing non-opioid treatments for chronic pain and advocating for limited opioid usage.[42] While opioid prescribing rates have decreased in recent years, analysis of patient opioid prescription data from a national electronic health record vendor during 2014-2017 found that the percentage of patients prescribed an opioid was higher in rural than in urban areas.[42] Access to medication-assisted treatment facilities and alternative therapies is limited in rural areas.[42,43] The CDC Opioid Dispensing Rate map shows the estimated rate of opioid prescriptions per 100 US residents, with some counties having much higher rates than others.[43] While Guatemala faces regulatory barriers, educational gaps, and restricted morphine access, the US prescription landscape is shaped by responses to opioid-related challenges, prioritizing alternative pain management approaches.

Interventions are needed for rural Guatemalan patients to help increase access to care. With patients likely not having optimized pain control of their chronic lower back pain, this can lead to debilitating disability and potentially loss of work.[8,9,10] Interventions must ensure that these patients can receive the appropriate care to manage their pain. Interventions should also aim to increase education about opioids and opioid overdose for rural Guatemalans, as this could be a lifesaving intervention. This information provides a good foundation for health practitioners to use regarding opioids, opioid knowledge, and chronic lower back pain for rural populations around the globe.

This study was limited due to a couple of factors. Transportation in rural Guatemala is a factor that contributed to which types of participants were able to come into the clinic for an opioid prescription evaluation for their chronic lower back pain. This limitation can skew the data when examining for differences in opioid use for chronic lower back pain amongst varying demographic groups. A second limitation of this study is that we excluded participants who did not feel comfortable with filling out a survey on their experience with opioid use. While we would have liked to include all participants, we wanted to ensure the utmost respect and privacy for all participants at the clinic in rural Guatemala. We also believe that even with the exclusion of participants who did not want to participate in the study, the study had sufficient statistical power, particularly for a study in a rural setting.

CONCLUSION

This research study was able to show that although there is a low prevalence of opioid use in rural Guatemala, many participants confirmed that they would accept an opioid prescription if offered. Patients also had a decreased knowledge regarding opioid overdose. Thus, physicians and other healthcare providers must do their due diligence to educate their communities about opioid use, opioid overdose, and naloxone use for a potential overdose. These patient perceptions in this study are essential for patients and providers to engage in a shared decision-making process for optimal pain management for chronic low back pain.

CONFLICT OF INTEREST

The author declares there is no conflict of interest.

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