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Original Research Article

Effects of patient education on knee joint injections and the impact on patient care and satisfaction in rural Guatemala

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ABSTRACT

Background: As the rates of osteoarthritis increase among the elderly population across the world, the number of intra-articular corticosteroid injections has also steadily increased. The objective of this research study was to compare the ratings of anxiety level, pain level, and education about glucocorticoid injections between the group who received expansive education about joint injections and the group who received minimal education about joint injections.
Methods: Each participant was given a pre-injection survey allowing them to rate their anxiety level, pain level, prior education level on knee injections, and duration and severity of symptoms. Each participant completed a post-injection survey following the procedure. Rating data were analyzed using a paired t-test to compare each of the groups to themselves and unpaired t-tests were used to compare the two groups. Demographic and survey data were analyzed using Fisher's exact test.
Results: Statistical significance was noted when a paired t-test was run between pain levels before and after the knee injection was administered in group A and between pain levels before and after the knee injection was administered in group B ($p<0.001$). A paired t-test also showed statistical significance when comparing the educational levels before and after the knee injection was administered in group A ($p=0.04$).
Conclusions: This research study showed that increased education on corticosteroid knee injections prior to the procedure demonstrated increased education on corticosteroid knee injections after the injection and decreased pain levels following the injection in participants with osteoarthritis in rural Guatemala.

Keywords: Chronic knee pain, Intra-articular knee joint injections, Knee pain management, Osteoarthritis, Patient care, Prevalence, Rural Guatemala, Sports medicine, Surveys

INTRODUCTION

Global health interventions and patient care present many challenges for clinicians and public health experts. Many countries across the globe have limited healthcare resources, which can lead to global health inequity.[1,2] Additionally, a staggering number of patients across the globe do not have healthcare access.[3,4] Rural populations particularly raise concern for their lack of healthcare access, sometimes requiring multiple hours of travel. This inevitably results in large healthcare disparities among those living in rural communities.[5,6] Rural populations may not have the necessary transportation resources to

reach distant healthcare facilities.[7-9] In addition, rural populations may have decreased health literacy, which could also lead to health disparities.[10,11] A major social challenge is that some rural populations may also have beliefs against medical care and may avoid medical systems.[12] Healthcare and research must continue to expand by involving rural populations for equal representation and providing rural populations across the globe with the necessary healthcare they deserve.

The rates of osteoarthritis (OA) have steadily increased among older populations across the world.[13,14] Osteoarthritis affects millions of people annually across the globe.[13,14] Management of OA costs healthcare systems across the globe billions annually.[15,16] Osteoarthritis is a degenerative disease where bones lose their articular cartilage and begin to develop bone remodeling.[17,18] The American Academy of Orthopaedic Surgeons (AAOS) clinically defines osteoarthritis as stiffness, pain, inflammation, and pain that is worse in the morning and feels better with activity.[19] There are many risk factors for osteoarthritis, such as weight genetics, trauma, and most importantly, age.[20,21] Knees, being weight-bearing joints that see much wear and tear, are among the most commonly affected joints by osteoarthritis.[22] Osteoarthritis can be physically disabling, particularly for individuals who have physically demanding jobs to provide for their families[23]. Additionally, OA has a major impact on one's physical and mental capacity and can play a role in inducing other medical conditions such as depression, metabolic syndrome, and stroke.[24,25] This can lead to a domino effect and severely impair the patients and the relationships of those around them.

Osteoarthritis is managed through a variety of modalities. Some common routes include physical therapy, nonsteroidal anti-inflammatory drugs (NSAIDs), glucocorticoids, hyaluronic acid, platelet-rich plasma, stem cells, and total joint arthroplasty. Glucocorticoids remain one of the top modalities in the conservative management of OA due to their ability to reduce pain, increase mobility, and improve the quality of life in patients.[26,27] Many patients often develop relief of their symptoms for some time; however, the length of time is often variable amongst patients.[27,28] Glucocorticoid injections will remain a top modality in the management of osteoarthritis due to their efficacy.[27,28]

The National Institute of Health (NIH) study on patient perspective surrounding intra-articular injections for knee arthritis conducted a qualitative study interviewing participants with knee OA and identified themes that shaped a patient's decision on receiving an injection: 1) the impact of OA on participants' lives; 2) participants' attitudes and concerns, including the desire to avoid surgery, willingness to accept uncertain outcomes, and concerns about side effects and dependence; 3) the way participants gathered and processed information from physicians, peers, and the internet; and 4) the availability of injectable products.[29] The study found that participants were concerned about the effectiveness, toxicity, availability, and cost of injectable products.[29] The findings of these studies can help healthcare providers and clinicians become aware of the challenges that patients face when making injection decisions and help guide their patients into making informed decisions.

The goal of this study was to compare the ratings of anxiety level, pain level, and education about glucocorticoid injections between the group who received expansive education about joint injections and the group who received minimal education about joint injections. Additionally, the study examined the concerns that participants have regarding the injection. We hypothesize, in this study, that after the intervention and injection, both groups would have decreased anxiety levels, pain levels, and severity of symptoms. Furthermore, we hypothesize that after the intervention and injection, both groups would have increased educational levels. We also hypothesize that group A, the group with more extensive education, would have better ratings on these scores when compared with group B. We further hypothesize that there would be no statistical difference in demographic or survey data.

METHODS

Ethical approval

Participants were provided a consent recruitment statement in both English and Spanish to obtain their verbal consent before being involved in any research activity (A1, A2). This research was approved by the Kansas City University Institutional Review Board.

Study design

This study was cross-sectional that occurred in February 2023. The study was completed over eight days in rural Guatemala in the following order: Tecpán Guatemala, San Pedro Yepocapa, Patzun, Chimaltenango Centro, Santa Cruz Balanya, Chimaltenango Alameda, San Juan Alotenango, and Santa Catarina Barahona. All participants who met the criteria for OA clinically, according to the AAOS (stiffness, pain, inflammation, and pain that is worse in the morning and feels better with activity) and who verbally consented to participate in the research study were recruited into the study.[19]

Each participant was given a pre-injection survey (A7, A8) allowing them to rate their anxiety level, pain level, education level about knee injections, and duration and severity of symptoms.

Prior to the visit with their physician, participants in group A received an informational sheet with a full description of the injection procedure (A3, A4) and an accompanying video of the injection (Section 2.2), and participants in group B received a generic description of the procedure (A5, A6). After completing the pre-injection survey (A7,

A8) and reading the attachment (A3, A4, or A5, A6), participants received the injection in their affected knee. After the injection, each participant received a post-injection survey (A9, A10) with a list of concerns.

After the injection, participants again rated their anxiety level, pain level, and education level. The primary investigator and translators were onsite to answer additional questions or concerns.

Participants

Participants at the clinic sites in Guatemala were screened for osteoarthritis. Inclusion criteria included anyone over the age of 18 and who met the criteria for OA19 outlined in the study design. Exclusion criteria included anyone below the age of 18 or who did not meet the criteria for OA19. Participants consented to the risks, benefits, and potential harm of the study and to the treatment with glucocorticoids (A1, A2). Selected participants were randomized to the two groups through block randomization (ABAB) to reduce selection bias.[30]

Sample size included 40 participants, with 20 participants in group A and 20 participants in group B. Participants provided data including age, gender, education level, socioeconomic status, perceptions of glucocorticoid injections, and current symptomatology ratings in a pre-survey. Participants in group A received an informational sheet with a full description of the injection procedure (A3, A4) and an accompanying video of the injection (Section 2.2), and participants in group B received a generic description of the procedure (A5, A6). All patient education was carried out by the lead author of the research to maintain consistency throughout the study. After the injection, participants completed a post-survey about their symptomatology ratings and concerns (A9, A10).

Data analysis

An unpaired t-test was conducted to compare the two research groups before and after the knee injection for each of the following survey ratings: anxiety level, pain level, educational level about glucocorticoids, and severity of pain. A paired t-test was conducted to compare each of the above survey ratings of each research group against themselves before and after the knee injection. A Fisher's exact test was conducted to compare the demographic data and pre-survey data between the two groups (Table 1). The top post-survey injection concerns were collected and tallied (Table 2).

RESULTS

Forty participants met the inclusion criteria for osteoarthritis. Twenty participants were assigned to each of the groups through block randomization. All 40 participants completed the pre-injection survey and ratings (A7, A8). Thirty-nine participants completed the post-injection survey and ratings (A9, A10). One participant in group B did not complete the post-injection survey and ratings due to medical contraindications. One participant was retained in the study rather than excluded due to the completion of the pre-survey perceptions and ratings.

The study population consisted mostly of people 65 years old and older, with 52.5% of the population aged 65 or older. The study was 80% female and 20% male. Of the 40 participants, 72.5% of the participants did not complete high school-level education, and 97.5% of the participants were low-middle income class. A Fisher's exact test was run to compare the survey and demographics data between groups A and B (Table 1). There was no statistical significance noted when comparing the age ($p=0.924$), gender ($p=0.464$), educational level ($p=1.00$), socioeconomic status ($p=1.00$), the reason for joint injection ($p=1.00$), and duration of symptoms ($p=0.330$) between the two groups.

An unpaired t-test was conducted between groups A and B in both pre-injection ratings and post-injection ratings. There was no statistical significance noted before the knee injection was administered between groups A and B for anxiety level ($p=0.9616$), pain level ($p=0.2174$), educational level about glucocorticoid injections ($p=0.1968$), and severity of symptoms ($p=0.5178$). There was no statistical significance noted after the knee injection was administered between groups A and B for anxiety level ($p=0.3510$), pain level ($p=0.2360$), and educational level about glucocorticoid injections ($p=0.5212$).

A paired t-test was conducted to compare the pre-injection ratings and post-injection ratings for both groups A and B. Statistical significance was noted between pain levels before and after the knee injection was administered in group A ($p<0.001$). There was also statistical significance noted when a paired t-test was run between pain levels before and after the knee injection was administered in group B ($p<0.001$). Statistical significance was noted when comparing the educational levels of glucocorticoid injections before and after the knee injection was administered in group A ($p=0.0351$) and was not statistically significant for group B ($p=0.0586$). There was no statistical significance between anxiety levels before and after the knee injection in group A ($p=0.2296$) or group B ($p=0.4535$).

Post-survey injection concerns were collected, with the top concerns tallied in Table 2. The top concern by participants after the injection was "none", with 67.5% of participants having no concerns after receiving the glucocorticoid injection. The second highest concern was the pain level, with 25.0% of participants concerned about the pain level after the glucocorticoid injection.

Table 1: Demographics and survey data of the 40 participants who received knee injections for osteoarthritis in rural Guatemala.

Characteristics	Number (%) n=40	Group A Weighted% (95% CI)	Group B Weighted% (95% CI)	P value
Age (in years)				0.924
18-24	0 (0.0)	0 (0-0)	0 (0-0)	
25-34	0 (0.0)	0 (0-0)	0 (0-0)	
35-44	3 (7.5)	10 (0-23.1)	5 (0-14.6)	
45-54	8 (20.0)	20 (2.5-37.5)	20 (2.5-37.5)	
55-64	8 (20.0)	15 (0-30.6)	25 (6-44)	
65+	21 (52.5)	55 (33.2-76.8)	50 (28.1-71.9)	
Gender	0.464			
Male	8 (20.0)	25 (6-34.7)	15 (0-23)	
Female	32 (80.0)	75 (56-84.7)	85 (69.4-93)	
Non-binary	0 (0.0)	0 (0-0)	0 (0-0)	
Education level				1.00
No high school degree	29 (72.5)	70 (49.9-90.1)	75 (56-94)	
High school degree	8 (20.0)	20 (2.5-37.5)	20 (2.5-37.5)	
Some college	1 (2.5)	5 (0-14.6)	0 (0-0)	
College degree	2 (5.0)	5 (0-14.6)	5 (0-14.6)	
Graduate/doctoral	0 (0.0)	0 (0-0)	0 (0-0)	
Socioeconomic status				1.00
Low middle income class (13.9 in Guatemalan quetzal per day)	39 (97.5)	95 (85.4-100.0)	100 (100-100)	
High middle income class (24 in Guatemalan quetzal per day)	1 (2.5)	5 (0-14.6)	0 (0-0)	
Reasons for joint injection				1.00
Impact of osteoarthritis on participants' lives	18 (45.0)	45 (23.2-66.8)	45 (23.2-66.8)	
Participants' attitudes and concerns, including desire to avoid surgery, willingness to accept uncertain outcomes, and concerns about side effects and dependence	5 (12.5)	10 (0-23.1)	15 (0-30.6)	
The way participants gathered and processed information from physicians, peers, and the internet	0 (0.0)	0 (0-0)	0 (0-0)	
Availability of injectable products	17 (42.5)	45 (23.2-66.8)	40 (18.5-61.5)	
Duration of symptoms				0.330
1-6 months	4 (10.0)	10.5 (0-24.3)	7.7 (0-19.4)	
7-12 months	0 (0.0)	0 (0-0)	0 (0-0)	
1-2 years	14 (35.0)	47.4 (24.9-69.8)	19.2 (2-36.5)	
Greater than 2 years	21 (52.5)	42.1 (19.9-64.3)	50 (28.1-71.9)	

Table 2: Top post-survey concerns after glucocorticoid knee injection.

Concern	Number (%)
None	27 (67.5)
Pain	10 (25.0)
immediate effect	1 (2.5)
long-term effectiveness	1 (2.5)

DISCUSSION

The results of this study demonstrated that group A had increased educational levels on corticosteroid injections after the procedure which was statistically significant, whereas group B did not have increased educational levels. These results emphasize the importance of proper education prior to a procedure like a corticosteroid joint injection, as the group that received extensive information on injections became more well-informed about the process. Additionally, there was also a reduction in pain levels before and after the knee injection in both groups A and B as predicted, and these results were statistically significant. This possibly showed that pain levels after a joint injection weighed more heavily on the injection itself rather than the educational aspect of injections as both groups experienced a reduction in pain regardless of the type of education they received.

The results of this study showed there was no statistical significance noted before the knee injection was

administered in comparison between groups A and B for anxiety level, pain level, educational level about glucocorticoid injections, and severity of symptoms. There was also no statistical significance noted after the knee injection was administered between comparison groups A and B for anxiety level, pain level, and educational level about glucocorticoid injections. This could be due to the possibility that corticosteroid injections are limited in rural Guatemala. Considering the lack of research emphasizing the lack of projects involving injectables, many participants in the rural clinics mentioned that this was possibly their first and only chance of receiving a corticosteroid injection for their long-standing osteoarthritic pain. Thus, this can explain why many participants did not report high anxiety levels before or after the corticosteroid injection. Additionally, Guatemala still ranks the lowest in terms of literacy.[31] In 2014, 19 percent of the adult population (15 years and older) was illiterate.[31] This could have contributed to results that were not statistically significant in increasing the educational level about corticosteroid injections when comparing the two groups. Furthermore, the subjectivity of rating pain levels prior to and after the joint injection is heavily based on the joint injection itself and not the process of educating the participants about the injection.

The most common reasons for a joint injection were as expected, including the availability of injectable products and the impact of OA on the participants' lives. Many of the participants in the study complained about their osteoarthritic pain and its impact on their lives. They opted for a knee injection due to their inability to carry out their activities of daily living, including walking and working. In addition, many participants had not seen a doctor in many years and took this one opportunity to receive a joint injection without cost. According to the demographics data, 72.5% of the participants did not have a high school degree, and 97.5% of the participants made less than 13.9 Guatemalan quetzals per day, which roughly amounted to 1.78 US dollars per day (as of February 2023). Although there is a lack of data on the cost of a corticosteroid joint injection in rural Guatemala, many of the participants most likely could not afford a luxury such as a joint injection.

According to a previous research study by Lenhard et al, patient perspectives surrounding intra-articular injections of the knee concluded that participants were concerned about the effectiveness, toxicity, availability, and cost of injectable products.[29] However, in our study, 67.5% of the participants in rural Guatemala had no concerns following the joint injection, while 25.0% of the participants were concerned about the pain after the injection. This may be due to the lack of education and knowledge on joint injection prior to and even after the injection. Although group A received the most information on knee injections, the documentation they received included information on how injections reduce vascular permeability and inhibit the production of inflammatory cytokines and mediators such as prostaglandins and leukotrienes.[32] Participants may not have understood these terms, possibly inhibiting their educational level on knee joint injections. Furthermore, group A also received a video on the process of joint injections. While watching the video, most of the participants presented with fear about the pain of the injection. Thus, this could have contributed to concerns about pain following the injection rather than concerns about toxicity and effectiveness. The participants that had no concerns following the joint injections may have been more content with possibly feeling relief from the injection after years of suffering from OA that their top concerns were not focused on the toxicity of the injections.

This study was limited due to several factors. Transportation in rural Guatemala is a factor that contributed to which types of participants were able to come into the clinic for a knee joint injection. This limitation can skew the data when examining for differences in patient perception of knee joint injections amongst varying demographic groups. A second limitation of this study is the lack of literacy among many of the participants in rural Guatemala. If participants were unable to read, medical students would read the information sheet to the participants. However, words can be lost in translation due to differences in the pronunciation of certain words. A third limitation of this study was the misunderstanding of certain keywords for the study. For example, many participants did not understand the word "anxiety," which made it difficult for rating anxiety levels before and following the joint injection. Therefore, the word "scared" was substituted many times to allow participants to provide a rating for that category. A fourth limitation of this study is the lack of follow-up after the knee joint injection. Due to this factor, participant satisfaction was not recorded a few weeks or months after their knee joint injection. The final limitation of this study is that we excluded participants who did not feel comfortable with filling out a survey on their experience. 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 we believe that we had a sufficient sample size, particularly for a rural population study.

Future research should be conducted to further understand knee injections in rural populations. A future study that can be implemented to further provide patients with more information before joint injections include providing information sheets that can be understood by those who do not have any background in medicine. Providing information in layman's terms can help patients feel more comfortable before a procedure such as a joint injection. Additionally, studies can also focus on allowing patients to provide feedback on the information they would have liked to be included in the information sheets to further educate them about the process of injections. Future studies regarding patient perceptions of knee injections for OA will help improve the patient-physician relationship. Additionally, future studies can help seek out procedures that can be implemented in healthcare facilities to improve

patient satisfaction before and following orthopedic knee injections

CONCLUSION

This research study was able to show that extensive education on corticosteroid knee injections before the procedure can increase educational levels following the injection and decrease pain levels following the injection in participants with clinical osteoarthritis in rural Guatemala. These results could serve as important literature for clinicians managing osteoarthritis in rural populations.

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APPENDIX

A1. Recruitment statement for research participation in English.

Verbal Consent

Recruitment Statement for Research Participation

1. Tiffany Ruan and Karson Schroeder, medical students at KCU, are inviting you to participate in this research study.

2. The title of this study is Patient Perceptions of Intra-Articular Knee Joint Injections in Rural Guatemala. The purpose of this study is to compare the fear and anxiety level, pain level, and education ratings between the group who received education about joint injections and the group who did not receive education about joint injections, to compare the concerns about the injection among the group who had the opportunity to learn about the injection and the group who did not receive the same information, and to evaluate any difference in the list of concerns in receiving the injection amongst varying demographic groups.

3. Your participation in this study will involve filling out a pre-injection and post-injection survey.

4. The risks to you as a participant are minimal. These include any risks pertaining to filling out surveys.

5. The results of this study may be published in scientific research journals or presented at professional conferences. However, your name and identity will not be revealed, and your record will remain anonymous. No names will be needed as all surveys will be numbered.

6. Participation in this study may benefit you by providing feedback to your local clinic about how to best meet patient needs during minor procedures like joint injections. Patients will not receive any direct benefit from the study.

7. You can choose not to participate. If you decide not to participate, there will not be a penalty to you or loss of any benefits to which you are otherwise entitled. You may withdraw from this study at any time.

8. If you have questions about this research study, you can contact Tiffany Ruan or Karson Schroeder. If you have questions about your rights as a research participant, you can call the KCU Institutional Review Board at 816-654-7602 or irb@kanascity.edu.

A2. Recruitment statement for research participation in Spanish.

Consentimiento Verbal

Declaración de Reclutamiento para Participación en Investigación

1. Tiffany Ruan y Karson Schroeder, estudiantes de medicina de KCU, los invitan a participar en este estudio de investigación.

2. El título de este estudio es 'Percepciones de Pacientes Sobre las Inyecciones Intraarticulares en la Articulación de la Rodilla en Zonas Rurales de Guatemala'. El propósito de este estudio es para comparar el nivel de miedo y ansiedad, el nivel de dolor y las escalas de educación entre el grupo que recibió educación sobre las inyecciones en las articulaciones y el grupo que no recibió educación sobre las inyecciones en las articulaciones. Con el fin de comparar las preocupaciones sobre la inyección entre el grupo que tuvo la oportunidad de aprender acerca de la inyección y el grupo que no recibió la misma información, y para evaluar cualquier diferencia en la lista de preocupaciones al recibir la inyección entre los diferentes grupos demográficos.

3. Su participación en este estudio implicará completar una encuesta antes y después de la inyección.

4. Los riesgos para usted como participante son mínimos. Estos incluyen cualquier riesgo relacionado con el llenado de encuestas.

5. Los resultados de este estudio podrán ser publicados en revistas científicas de investigación o presentados en congresos profesionales. Sin embargo, su nombre e identidad no serán revelados y su registro permanecerá anónimo. No se necesitarán nombres ya que todas las encuestas estarán numeradas.

6. Su participación en este estudio puede beneficiarlo(a) al proporcionar comentarios a su clínica local sobre cómo satisfacer mejor las necesidades del paciente durante procedimientos menores como inyecciones en las articulaciones. Los pacientes no recibirán ningún beneficio directo del estudio.

7. Puede optar por no participar. Si decide no participar, no sufrirá ninguna sanción ni perderá ningún beneficio al que tenga derecho. Puede retirarse del estudio en cualquier momento.

8. Si tiene preguntas sobre este estudio de investigación, puede comunicarse con Tiffany Ruan o Karson Schroeder. Si tiene preguntas sobre sus derechos como participante de la investigación, puede llamar a la Junta de Revisión Institucional de KCU al 816-654-7602 o irb@kanascity.edu.

A3. Informational sheet for participants in Group A in English.

Attachment A

Intraarticular corticosteroid injections are a noninvasive treatment modality, often used when other conservative pain management treatments are ineffective. The corticosteroid is injected directly into the painful joint and is frequently used to treat knee and shoulder osteoarthritis, rotator cuff injuries, adhesive capsulitis, and acute inflammation. Symptoms of knee osteoarthritis include stiffness, pain, inflammation, and pain that is worse in the morning and feels better with activity (1).

These injections reduce vascular permeability and inhibit the production and subsequent accumulation of inflammatory cytokines and mediators such as prostaglandins and leukotrienes (2). Within a few hours after the injection, one may experience pain and swelling in the joint where the injection was given. Bruising can also be common. It is also recommended that one refrain from any high level activities using the knee for 48 hours after the injection; however, routine activities, such as walking, is permitted. Ultimately, joint injections are clinically effective in increasing joint mobility, reducing joint inflammation, and decreasing erythema, swelling, and acute pain.

Although intraarticular injections are simple to perform and the risk profile is low, some adverse side effects are not uncommon. Commonly experienced side effects include post injection flares, skin changes such as hypopigmentation, atrophy of adipose tissue, infection at the injection site, facial flushing, allergic reaction, tendon damage, and transient increase in blood glucose and hyperglycemia (3).

According to a meta-analysis completed in 2004 by the NIH, intraarticular knee injections of corticosteroid improved symptoms of osteoarthritis and were beneficial up to two weeks and at 16 to 24 weeks. In this study, responses to the corticosteroid injections varied between the clinical experience of rheumatologists, where some of the patients had significant and sustained response (4).

According to a randomized, double-blind, placebo-controlled trial, intraarticular steroid injections in OA of the knee showed no deleterious effects of long-term administration of steroids on the anatomical structure of the knee. Long-term treatment of knee OA with repeated steroid injections also showed to be clinically effective for the relief of symptoms (5).

With 408K views on YouTube, Dr. Dean Eggitt's "Knee joint steroid injection" is the most viewed video on corticosteroid knee injections (6). This video will be shown to you before you receive your knee injection so that you know what to expect.

(1) https://orthoinfo.aaos.org/en/diseases--conditions/osteoarthritis/
(2) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4095029/
(3) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2527227/
(4) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC387479/
(5) https://pubmed.ncbi.nlm.nih.gov/12571845/#:~:text=No%20deleterious%20effects%20of%20the,of%20symptoms%20of%20the%20disease.
(6) https://www.youtube.com/watch?v=0W3i_fJfa4w&t=1s

A4. Informational sheet for participants in Group A in Spanish.

Anexo A

Las inyecciones intraarticulares de corticosteroides son una modalidad de tratamiento no invasivo, que a menudo se usa cuando otros tratamientos conservadores para el manejo del dolor son ineficaces. El corticosteroide se inyecta directamente en la articulación adolorida y se usa con frecuencia para tratar la osteoartritis de rodilla y hombro, lesiones del manguito de los rotadores, capsulitis adhesiva e inflamación aguda. Síntomas de osteoartritis de la rodilla incluyen rigidez, dolor, inflamación y dolor que empeora por la mañana y se siente mejor con la actividad (1).

Estas inyecciones reducen la permeabilidad vascular e inhiben la producción y posterior acumulación de citocinas y mediadores inflamatorios como las prostaglandinas y los leucotrienos (2). Unas pocas horas después de la inyección, uno puede experimentar dolor e hinchazón en la articulación donde se aplicó la inyección. Los moretones también son comunes. También se recomienda abstenerse de cualquier actividad de alto nivel físico usando la rodilla durante 48 horas después de la inyección; sin embargo, se permiten actividades de rutina, como caminar. Las inyecciones articulares son clínicamente efectivas para aumentar la movilidad articular, reducir la inflamación articular y disminuir el eritema, la hinchazón y el dolor agudo.

Aunque las inyecciones intraarticulares son simples de realizar y el perfil de riesgo es bajo, no son infrecuentes algunos efectos secundarios adversos. Los efectos secundarios comúnmente experimentados incluyen brotes posteriores a la inyección, cambios en la piel como hipopigmentación, atrofia del tejido adiposo, infección en el lugar de la inyección, enrojecimiento facial, reacción alérgica, daño en los tendones y aumento transitorio de la glucosa en sangre e hiperglucemia (3).
Según un metanálisis realizado en 2004 por la NIH, las inyecciones intraarticulares de corticosteroides en la rodilla mejoraron los síntomas de la osteoartritis y fueron beneficiosas hasta las dos semanas y entre las 16 y las 24 semanas. En este estudio, las respuestas a las inyecciones de corticosteroides variaron según la experiencia clínica de los reumatólogos, donde algunos de los pacientes tuvieron una respuesta significativa y sostenida (4).

Según un ensayo aleatorizado, doble ciego, controlado con placebo, las inyecciones intraarticulares de esteroides en la artrosis de rodilla no mostraron efectos nocivos de la administración prolongada de esteroides en la estructura anatómica de la rodilla. El tratamiento a largo plazo de la artrosis de rodilla con inyecciones repetidas de esteroides también demostró ser clínicamente eficaz para el alivio de los síntomas (5).

Con 408 000 visitas en YouTube, el video "inyección de esteroides en la articulación de la rodilla" del Dr. Dean Eggitt, es el video más visto sobre inyecciones de corticosteroides en la rodilla (6). Se le mostrará este video antes de recibir la inyección en la rodilla para que sepa qué anticipar.

(1) https://orthoinfo.aaos.org/en/diseases--conditions/osteoarthritis/
(2) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4095029/
(3) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2527227/
(4) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC387479/
(5) https://pubmed.ncbi.nlm.nih.gov/12571845/#:~:text=No%20deleterious%20effects%20of%20the,of%20symptoms%20of%20the%20disease.
(6) https://www.youtube.com/watch?v=0W3i_fJfa4w&t=1s

A5. Informational sheet for participants in Group B in English.

Attachment B

Intraarticular corticosteroid injections are a noninvasive treatment modality, often used when other conservative pain management treatments are ineffective. The corticosteroid is injected directly into the painful joint and is frequently used to treat knee and shoulder osteoarthritis, rotator cuff injuries, adhesive capsulitis, and acute inflammation. Symptoms of knee osteoarthritis include stiffness, pain, inflammation, and pain that is worse in the morning and feels better with activity (1).

(1) https://orthoinfo.aaos.org/en/diseases--conditions/osteoarthritis/

A6. Informational sheet for participants in Group B in Spanish.

Anexo B

Las inyecciones intraarticulares de corticosteroides son una modalidad de tratamiento no invasivo, que a menudo se usa cuando otros tratamientos conservadores para el manejo del dolor son ineficaces. El corticosteroide se inyecta directamente en la articulación dolorida y se usa con frecuencia para tratar la osteoartritis de rodilla y hombro, lesiones del manguito de los rotadores, capsulitis adhesiva e inflamación aguda. Síntomas de osteoartritis de la rodilla incluyen rigidez, dolor, inflamación y dolor que empeora por la mañana y se siente mejor con la actividad (1).

(1) https://orthoinfo.aaos.org/en/diseases--conditions/osteoarthritis/

A7. Pre-injection survey in English

Patient Perceptions of Intra-Articular Knee Joint Injections in Rural Guatemala – PRE-SURVEY

Age

☐ 18-24 years old ☐ 25-34 years old ☐ 35-44 years old ☐ 45-54 years old
☐ 55-64 years old ☐ 65(+) years old

Gender

☐ Male ☐ Female ☐ Non-binary

Education Level

☐ No high school degree ☐ High school degree ☐ Some college ☐ College degree
☐ Graduate/doctorate school

Socioeconomic Status

☐ Low middle income class (13.9 in Guatemalan quetzal per day)
☐ High middle income class (24 in Guatemalan quetzal per day)

Reason for Joint Injection

☐ Impact of osteoarthritis on participants' lives
☐ Participants' attitudes and concerns, including desire to avoid surgery, willingness to accept uncertain outcomes, and concerns about side effects and dependence
☐ The way participants gathered and processed information from physicians, peers, and the internet
☐ Availability of injectable products
☐ Other: _____

Ratings (Scale: 0-10)

Anxiety level: _____
Pain level: _____
Education level about knee injections prior to the procedure: _____
Duration of symptoms (approximately how many days, months, or years): _____
Severity of symptoms: _____

A8. Pre-injection survey in Spanish

Percepciones de Pacientes Sobre las Inyecciones Intraarticulares en la Articulación de la Rodilla en Zonas Rurales de Guatemala – ENCUESTA ANTES DE INYECTARSE

Edad

☐ 18-24 años ☐ 25-34 años ☐ 35-44 años ☐ 45-54 años
☐ 55-64 años ☐ 65(+) años

Género

☐ Hombre ☐ Mujer ☐ No-binario

Nivel Educativo

☐ Sin Preparatoria ☐ Preparatoria ☐ Alguna educación superior (sin titulo)
☐ Título universitario/ licenciatura ☐ Posgrado/Doctorado

Estado Socioeconómico

☐ Clase de ingresos medio – bajos (13.9 Quetzales Guatemaltecos por día)
☐ Clase de ingresos medio – altos (24 Quetzales Guatemaltecos por día)

Motivo de la Inyección Conjunta

☐ Impacto de la artrosis en la vida de los participantes
☐ Actitudes y preocupaciones de los participantes, incluido el deseo de evitar la cirugía, la voluntad de aceptar resultados inciertos y las preocupaciones sobre los efectos secundarios y la dependencia.
☐ La forma en que los participantes recopilaron y procesaron información de médicos, colegas e Internet
☐ Disponibilidad de productos inyectables
☐ Otro: _____

Valuación (Escala: 0-10)

Nivel de ansiedad: _____
Nivel de dolor: _____
Nivel de conocimiento sobre las inyecciones de rodilla antes del procedimiento: _____
Duración de los síntomas (aproximadamente cuántos días, meses o años): _____
Gravedad de los síntomas: _____

A9. Post-injection survey in English.

Patient Perceptions of Intra-Articular Knee Joint Injections in Rural Guatemala – POST-SURVEY

Concerns after Joint Injection

☐ How it works ☐ Process of injection ☐ Pain ☐ Immediate effect ☐ Long-term effectiveness
☐ Toxicity ☐ Availability ☐ Cost ☐ Other: _____

Ratings (Scale: 0-10)

Anxiety level: _____
Pain level: _____
Education level about knee injections following the procedure: _____

A10. Post-injection survey in Spanish

Percepciones de los pacientes sobre las inyecciones intraarticulares en la articulación de la rodilla en zonas rurales de Guatemala – ENCUESTA DESPUES DE INYECTARSE

Preocupaciones después de la inyección intraarticular

☐ Cómo funciona ☐ Proceso de inyección ☐ Dolor ☐ Efecto inmediato ☐ Eficacia a largo plazo
☐ Toxicidad ☐ Disponibilidad ☐ Costo ☐ Otros: _____

Valuación (Escala: 0-10)

Nivel de ansiedad: _____
Nivel de dolor: _____
Nivel de conocimiento sobre las inyecciones de rodilla después del procedimiento: _____