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The Use of Mobility and Medication on Patient's Perception of Pain in Hospitalized Patients with Chronic Back Pain Benchmark Study

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Executive Summary

Quality patient outcomes are what the whole medical team wants. Part of obtaining optimal results is providing a patient with a hospital stay with little to no pain. In patients with chronic pain conditions, this can be more difficult. In efforts to reduce a patient's perception of pain and also improve hospital satisfaction scores, this project focuses on different ways to mitigate pain. Many chronic low back pain (CLBP) sufferers report that they get sore if they remain in one position. This project records initial pain levels, then offers the patient a chance to move, after mobility exercises the patient is asked to rate their pain again. These two pain reports will be compared to see if mobility helps the perception of pain in CLBP sufferers. By improving a patient's perception of their treatment while in the hospital, this can improve Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores.

The Use of Mobility and Medication on Patient's Perception of Pain in Hospitalized Patients with Chronic Back Pain Benchmark Study

Rationale for the Project

Hospitalizations are not fun for anyone. Once independent adults are put in a situation with hospital rules and regulations. Bedrest and inactivity increase pain for the CLBP patient. During a hospital stay, people with CLBP continue to experience back pain and may not be able to mitigate that pain as they would at home. Movement, is important when trying to control the perception of pain, which is why walking is an important therapy for lower back pain (Nduwimana et al., 2020). When a hospitalized patient experiences pain, the nurse should ask them to rate their pain and then give them pain medication (Boss & Huether, 2019). For patients with CLBP, the simple act of walking to the bathroom or changing position into the bedside chair might make all the difference in managing their chronic pain. This benchmark project focuses on the PICOT question: In patients with chronic low back pain (P), how does frequent mobility combined with medication (I) compared to medication alone (C) affect patient's pain when using the numerical pain rating scale (O) during their hospital stay (T)?

Project Goals

The goal of this project is to improve pain management and pain perception for anyone needing to be in the hospital but specifically for those with CLBP. Pain management techniques are underutilized in the hospital environment due to lack of education and lack of time. By educating both staff and patients on the benefits of movement in relation to pain management, the ability to properly and effectively manage pain will be improved.

Literature Discussion to Support Project

The evidence suggests that no matter what kind of exercise is performed, the act of moving one's body and changing positions does decrease the perception of pain. Twelve articles revealed that any form of exercise, compared to no exercise, help patients with their perception of pain (Alanazi et al., 2018; Belavy et al., 2021; Ferreira et al., 2017; Hayden et al., 2005; Li et al., 2019; Martins, 2017; Mueller & Niederer, 2020; Nduwimana et al., 2020; Sitges et al., 2021; Suh et al., 2019; Wasser et al., 2017; Yao et al., 2020) . The articles used in this benchmark project discussed several different exercise methods. All were programs lasted over 4 weeks. Even though the typical hospital stay is not that long, the results of these research studies can be applied to those suffering with CLBP in a hospital setting. These studies also show how exercise and mobility are a very important tool in managing pain for CLBP patients. Therefore, when patients are hospitalized, this tool should not be put away. Hospitalized patients need to continue to be active in order to maintain their highest level of independence and quality of life. Future research on the effects of mobility and pain needs to be done within a hospital setting. Research should begin by assessing the pain level of a patient with CLBP before mobility, then performing some level of mobility (whether that be ADLs, or walking), and then reassessing pain level after mobility. This may show mobility as an effective way of managing pain in a hospital setting.

Project Stakeholders

Baylor Scott and White Waxahachie is a small acute care hospital located just south of Dallas, Texas. They employ over 350 clinicians, fill 129 hospital beds, and feature large windows that provide natural lighting for healing. This project could be carried out throughout all six floors of the hospital, but the floor the project coordinator works on is the 4th floor, known for being a neuro/medsurg/tele unit. The average age on this floor is 70 years old. Many patients have concomitant conditions and many report CLBP.

Patient satisfaction is important at Baylor Scott and White. Part of that satisfaction is how their pain is being managed. The Service Champion rounds daily with patients to evaluate their perception of their care. Many times, patients report having pain that hasn't been treated to their satisfaction. This information gets reported back to the nurse and the easiest, fastest way to "fix the problem" is to administer pain medications. But what if that line of thought were to change slightly? What if the first thought by the nurse was, "when did my patient last get up and move?" Patients can still receive the medication, but this project would take a small step before that measure: rating the pain, doing some physical activity, and then rating the pain again.

The 4th floor has 25 rooms and many patients are not oriented. The floor should have 5 nurses, 3 techs, a charge, and a receptionist. Nurses care for 5 patients which can be very challenging to coordinate for many reasons. One reason is that often the floor only has two techs, which affects the nurse's ability to do "extra" things for their patients. This hard-working team will need to really "buy in" to this project to obtain adequate staff participation. This project must be well coordinated and easy to implement without a lot of extras in order for compliance. Help from everyone in the team is important, from techs, to nurses, to physical therapists. When a patient reports pain, first ask for their pain level, then get them to move to the chair or to do an ADL, ask for the pain level again, and then of course, offer pain medications if needed. Then the healthcare member should chart the information provided, including activity performed. An in-service education about the importance of movement and activity to regulate pain could make a difference in some nurses' level of cooperation. Developing a team attitude about the responsibility of mobilizing the patients might reach others.

Project approval is a multistep process passing through the project coordinator's immediate supervisor, the education director, the house supervisor, and the hospital approval

committee. The supervisor on the 4th floor has been very open and helpful in this process so far, providing information about the hospital and the approval process. This project does not require additional money, only a small amount of time and effort from the already spread thin staff. The project coordinator plans to develop a flyer detailing the project and email the team to ask what would better motivate them, what could help them, and what are the barriers they foresee. By including the team in this process, compliance will be increased.

Proposed Outcomes

Patients with CLBP experience pain daily. Prolonged periods of inactivity can make that pain worse. This project should improve a patient's perception of pain while in a hospital setting by allowing the patient to mitigate their pain by encouraging activity. Not only will this activity help with their physical perception of pain, but it will help keep them at a level of independence to help with their transition back home. Addressing their pain and offering solutions for their comfort can also help with their perception of their hospital stay leading to improved Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHP) scores.

Evaluation Design

With every project, one must have a way to evaluate the success or failure. Data must be compiled and assessed. Evaluation of this benchmark study will be achieved by obtaining a numerical pain rating before and after activity. This information will be taken with every patient reporting pain and input into the electronic health record (EHR). After 3 months of compiling data, reports will be run on the average pain rating in the previous 3 months compared to the average pain rating during the project. The data from the ratings before the activity as opposed to after the activity will also be compared.

In order to maintain stakeholder interest and engagement, HCAHP scores will be collected for the 3 months prior to the project and compared to the 3-month period during the project. Patient satisfaction heavily relies on a patient's perception that their needs were met. If a patient feels like their pain was not controlled during their hospital stay, hospital scores will be affected. By implementing this project, the nurse is not only addressing a patient's pain once but twice in one interaction. The nurse is also teaching the patient about other ways to mitigate pain. Theoretically, the time spent with the patient will not only improve patient outcomes but also improve hospital HCAHPS scores.

Timetable/Flowchart

This project has three phases: planning/education, implementation, and evaluation (See Appendix 2). Data will be extracted from Epic, the electronic health record used by Baylor Scott and White. Pain scale data from before and after mobility efforts will be analyzed to see if patients' perception of pain decreased after mobility activities. This data will be statistically analyzed for significance. Another data point to be analyzed is patient satisfaction scores, pre and post project. These two data points will show whether perception of pain was decreased by mobility and if the increased mobility led to increased patient satisfaction. If either of these two points show improvement, it would seem to be beneficial to keep this initiative in place going forward.

Data Collection Methods

Staff will be educated about the project and instructed to take patient pain ratings (Appendix 3) before and after mobility exercise. These reported pain ratings will be input into the hospital's EHR, Epic. At the end of the proposed project interval, the data will be extracted and analyzed for significance.

Discussion of Evaluation

The need for change has been identified and a patient's perception of their pain is important in managing patient satisfaction and quality outcomes. An easily incorporated benchmark study has been complied and a plan outlined. Dissemination of information has been identified. Team integration has been discussed. Gatekeepers have been recognized. How outcomes will be measured have also been standardized. The literature was evaluated and all articles reported decrease in perception of pain by using some form of exercise (see Appendix 1). It is now time to put this project into the hands of those who will approve it in order to make this project succeed.

Costs/Benefits

This project will benefit Baylor Waxahachie by improving patient satisfaction and quality patient outcomes. A patient that is not in constant pain can heal faster and maintain one's personal independence by staying mobile and active. A minimal cost will be incurred through copying informational flyers and the time used to distribute them. Other costs would be linking and uploading the educational materials in order for staff to utilize them. Another benefit the organization stands to gain is lowered re-admittance rate. Keeping a patient at their level of functionality or even increasing their level of independence can help keep patients from being readmitted due to deconditioning due to their hospital stay. As mentioned previously, another benefit could be better HCAHP scores due to patients having a sense of their needs being met while in the hospital.

Conclusions/Recommendations

Reduction of the perception of pain benefits both the patient and the hospital. Patients in less pain are happier with their care and will produce higher satisfaction scores. Also, patients in

less pain will ambulate more and get back to their highest level of functioning so they can be discharged and return to their own lives. By including and educating the team on the importance of these goals, this project has the potential in bringing forth real evidence-based change. Most importantly, the patients potentially will be in less pain. A patient's comfort should be of utmost importance. Helping a patient feel less in pain while in the hospital and learn ways to control their pain in their day to day lives is the end goal.

It is recommended that patients with the diagnosis of CLBP should continue to be active while hospitalized to help mitigate their perception of pain. Many different types of exercise were evaluated in the articles compiled for this paper. All forms of exercise proved to help decrease the patient's perception of pain (Alanazi et al., 2018; Belavy et al., 2021; Ferreira et al., 2017; Hayden et al., 2005; Li et al., 2019; Martins, 2017; Mueller & Niederer, 2020; Nduwimana et al., 2020; Sitges et al., 2021; Suh et al., 2019; Wasser et al., 2017; Yao et al., 2020). It is important to educate healthcare workers about the importance of managing a patient's pain and the different methods to try. A more knowledgeable healthcare team in regards to pain management produces better patient outcomes (Brant et al., 2017).

The patient needs to be educated about the importance of physical activity in efforts to control their pain. A patient's preference can then be applied to what the patient wants to do. Incorporating a patient's preference into the treatment plan can lead to better results (Mühlbacher et al., 2015). A patient's perception of pain influences how they respond to their HCAHPS (Brant et al., 2017).

In the spirit of beneficence, this project is intended to do no harm. If the patient in question is on bedrest or if they physically cannot get up because of medical reasons, it would not be advisable to include them in this study. The goal of this project is to provide the patient

with a less painful experience, not to create more. Patients would be given the autonomy to choose for themselves but also educated about the benefits movement would have on their pain.

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Appendix 1

Evidence Synthesis Table

| Studies | Design | Sample | Intervention | Outcome |
|---------|----------------------|---------|-------------------------------|--|
| 1 | SR and meta-analysis | N= 1576 | WE, Activity limitation, Yoga | WE was as effective as control interventions in the short-term and slightly superior in the intermediate term with respect to pain. Yoga was no longer superior to control interventions for 6 at the 6 month follow up. |
| 2 | RCT | N= 63 | Wuquini, General X | This study showed that Wuqinxi had better effects on CLBP than general X |
| 3 | Qualitative | N=13 | PT | People are human and when they leave the hospital, they choose to do what they want, in regards to their treatment plan. All the women in this study reported recurring pain once they stopped doing PT even though they also reported PT helped them. |
| 4 | SR and meta-analysis | N= 1239 | The amount of X | Getting one's patient up 20 minutes per day can help mitigate their pain |
| 5 | RCT | N= 60 | FE, WE, SE, SWE | All X showed benefits. X is an effective way to mitigate pain. |
| 6 | Qualitative | N= 1351 | AX, RX, AQU, Y-P | All X provided improvements in all areas. AQU showed more improvements across the board for all areas. |
| 7 | SR and meta-analysis | N=18 | X | X training could be preferenced as a therapeutic tool to reduce pain sensitivity over passive modalities |

| | | | | |
|----|----------------------|--------|-------------------------------|---|
| 8 | SR and meta-analysis | N=130 | Stabilization X | Stabilization X, as reported in the included study, is shown to be effective in reducing back pain, disability and improving quality of life in adults with idiopathic scoliosis. |
| 9 | RCT | N=12 | Maitland X | We can infer that both the Maitland Method and the X are effective for the reduction of pain and improvement of function in individuals with CLBP |
| 10 | SR and meta-analysis | N=6390 | X | In CLBP, there is strong evidence that X is at least as effective as other conservative tx. |
| 11 | SR and meta-analysis | N= 9 | Baduanjin X | Findings of the present study suggest that Baduanjin is effective for LBP. |
| 12 | Quasi-experimental | N=81 | AX, Stretching, Strengthening | All types of X evaluated showed improvement in patient's PoP. |

Legend: 1 = (Nduwimana et al., 2020) , 2 = (Yao et al., 2020), 3 = (Martins, 2017), 4 = (Mueller & Niederer, 2020), 5 = (Suh et al., 2019), 6 = (Wasser et al., 2017), 7 = (Belavy et al., 2021), 8 = (Alanazi et al., 2018), 9 = (Ferreira et al., 2017), 10 = (Hayden et al., 2005), 11 = (Li et al., 2019), 12 = (Sitges et al., 2021), AX- aerobic exercise; AQU- aquatic exercise; CLBP- chronic low back pain; FE- flexibility exercise; LBP- low back pain; MBT- mind body therapy; MR- meta-regressions; PoP- perception of pain; PT- physical therapy; RCT- randomized control trial; RX- resistance exercise; SE- stabilization exercise; SR- systematic review; SWE- stabilization with walking exercise; X- Exercise; WE- walking exercise; Y-P- yoga-pilates

Outcomes Table: Effect of Exercise on the Perception of Pain

| | 1♦ | 2♦ | 3 | 4♦ | 5♦ | 6 | 7♦ | 8♦ | 9♦ | 10♦ | 11♦ | 12 |
|---------------------|----|----|----|----|----|----|----|----|----|-----|-----|----|
| WE | ↓* | NE | NE | NE | ↓ | NE | NE | NE | NE | NE | NE | NE |
| FE | NE | NE | NE | NE | ↓ | NE | NE | NE | NE | NE | NE | NE |
| SE | NE | NE | NE | NE | ↓ | NE | NE | ↓* | NE | NE | NE | NE |
| SWE | NE | NE | NE | NE | ↓ | NE | NE | NE | NE | NE | NE | NE |
| STE | NE | NE | ↓ |
| Baduanjin | NE | ↓ | NE |
| Wuqinxi | NE | ↓* | NE | NE | NE |
| AQU | NE | NE | NE | NE | NE | ↓ | NE | NE | NE | NE | NE | NE |
| Yoga | ↓ | NE | NE | NE |
| Activity limitation | NC | NE | NE | NE |
| MBT | ↓ | NE | NE | NE |
| General X | NE | ↓ | NE | ↓ | NE | NE | ↓ | ↓ | NE | ↓ | NE | NE |
| PT | NE | NE | ↓ | NE | NE | NE | NC | NE | NE | NE | NE | NE |
| AX | NE | NE | NE | NE | NE | ↓ | NE | NE | NE | NE | NE | ↓ |
| RX | NE | NE | NE | NE | NE | ↓ | NE | NE | NE | NE | NE | NE |
| Y-P | NE | NE | NE | NE | NE | ↓ | NE | NE | NE | NE | NE | NE |
| Maitland | NE | ↓ | NE | NE | NE |
| Stretching | NE | NE | ↓ |

Legend: 1 = (Nduwimana et al., 2020) , 2 = (Yao et al., 2020), 3 = (Martins, 2017), 4 = (Mueller & Niederer, 2020), 5 = (Suh et al., 2019), 6 = (Wasser et al., 2017), 7 = (Belavy et al., 2021), 8 = (Alanazi et al., 2018), 9 = (Ferreira et al., 2017), 10 = (Hayden et al., 2005), 11 = (Li et al., 2019), 12 = (Sitges et al., 2021), AX- aerobic exercise; AQU- aquatic exercise; FE- flexibility exercise; MBT- mind body therapy; NC = no significant change, NE = not evaluated, NR = no

results provided; PT- physical therapy; RX- resistance exercise; SE- stabilization exercise; SWE- stabilization with walking exercise; X- Exercise; WE- walking exercise; Y-P- yoga-pilates

* = statistically significant findings

◆ = higher level evidence

Appendix 2

| Phases | Time frame | Actions during this phase |
|---------------------------|-------------------|--|
| Planning/Education | 1-2 weeks | The team will be informed of the project, the theory behind the project, and the plan. At that time, the team will be asked for their ideas for improvement of the project. Those ideas will be assessed and put into action if proven legitimate. |
| Implementation | 10 weeks | A start and end date will be chosen and the project will take place. The project will begin. Half way through the project, the process will be assessed for compliance and issues. |
| Evaluation | 1 week | Data will be collected and analyzed. |

Appendix 3

Numeric Rating Scale



Wong-Baker FACES® Pain Rating Scale



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