Relieving Pain and Anxiety

Via Sensory Modification

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Prescription Problems

- Dramatic increase in abuse/misuse of prescription medications (opioids, benzodiazepines and other CNS depressants, etc.)
- Work by inducing euphoria or suppressing brain activity in order to produce a calming effect
- Often are inappropriately snorted, injected or taken in large, unsafe doses in order to increase these effects

Inpatient Issues

- Drugs used during or after surgery to produce sedation or treat anxiety and pain often also produce:
  - Respiratory depression
  - Nausea and vomiting
  - Confusion, delirium, & cognitive dysfunction
  - Problems regulating body temperature (hypothermia and hyperthermia)

Inpatient Issues

- Headache
- Mood swings/agitation
- Paranoia
- Sleep disturbance
- Hypotension
- Reduction in heart rate

Inpatient Issues

- Constipation
- Urinary retention
- Dry mouth
- Visual changes
- Dizziness (can lead to falls and other injuries)

WHY?

How can we reduce the usage of these drugs and promote the safety of our patients?

Purpose

- Review of literature
- Evaluate efficacy of sensory modification in relieving pain and anxiety and promoting sleep as an alternative to pharmacological management.

Methods

- Single researcher
- Databases: OVID, CINAHL/EBSCO, and PubMed
- Keywords: procedure, noise, ICU, light, surgery, pain, sleep, anxiety reduction
- Inclusion Criteria: English language, human subjects, full text, clinical trial, <5 years old.

Methods

- 15 topic relevant studies located
- ALL studies were randomized controlled trials (RCT)
- 7 studies rejected for sample population mismatch (either involved dental procedures or sampled children)
- 8 studies retained for this review

Studies

- 8 RCTs of mixed modality
- Two studies involved earplugs and eye masks vs routine care
- Three studies involved massage therapy or therapeutic touch vs routine care
- Three studies involved music intervention vs routine care

Trials and Modalities

- 2 studies examined use of earplugs and eyemasks
  - n= 41 Examined earplugs and eye masks vs routine care in post anesthesia care unit (PACU)

*Le Guen et al., (2014)

  - Measures (Le Guen et al., (2014):
    - Randomization into two groups upon admission to PACU via sealed envelopes (routine care OR routine care + earplugs and eye masks)

Trials and Modalities

- Sleep quality assessed via 3 methods
  - Self assessment using 12 question MOSS (Medical Outcome Study Scale) and 6 question Spiegel scale
  - External intermittent measurement by PACU nurse using a specific chart showing behavior and disturbing events
  - Wrist actigraph worn on non dominant wrist – objective measure of activity

Trials and Modalities

- Outcome: Earplugs and eye masks applied in PACU vs routine care significantly preserve sleep quality and may contribute to reduced anxiety.

* Le Guen et al., (2013)

Trials and Modalities

- n= 45 Examined effect of earplugs and eye masks combined with relaxing music on sleep in ICU patients.

*Prospective, single center, parallel group RCT

- Measures:
  - Randomization via closed envelope
  - Subjective sleep quality assessment per self report using the Richards-Campbell Sleep Questionnaire (RCSQ)

*Hu, Jiang, Hegadoren, & Zhang (2015)

Trials and Modalities

- Measurement of sleep latency, depth, efficiency, quality and perceived nighttime noise)
  - Preoperative Pittsburgh Sleep Quality Index (PSQI)
  - Nocturnal (12 hour) urine for melatonin and cortisol
  - Nocturnal noise and light levels in ICU measured using digital sound meter and light detector at pt eye level

Trials and Modalities

- Outcome:
  - Subjective sleep quality and perception of nighttime noise significantly higher in experimental group.
  - No difference in melatonin and cortisol levels or light and noise levels between groups

*Hu, Jiang, Hegadoren, & Zhang (2015)

Trials and Modalities

- 3 studies used massage and/or therapeutic touch

  - n= 152 Examined massage therapy in cardiac surgery patients

  *Braun et al., (2012)

  - Measures * Braun et al., (2012):
    - Participants randomized into either group receiving massage therapy OR an equivalent rest period

Trials and Modalities

- Visual analog scales (VAS) evaluating perception of pain, anxiety, muscular tension, and satisfaction before and after intervention
- Vital signs recorded by nurse
- Massage therapist noted patient feedback

* Braun et al., (2012):

Trials and Modalities

- Outcome * Braun et al., (2012):
  - Massage produced a significantly greater reduction in pain and muscular tension and increase in relaxation and satisfaction compared to equivalent rest time

Trials and Modalities

- n=117 Examined effectiveness of massage therapy in managing anxiety of patients receiving percutaneous coronary intervention (PCI).

  *Peng, Ying, Chen, & Sun (2015)

Trials and Modalities

- Measures *Peng, Ying, Chen, & Sun (2015):
  - Randomization into intervention group (20 min massage) or usual care control group
  - Vitals measured by same nurse at certain intervals
  - State-Trait Anxiety Inventory (STAI)
  - Four point verbal rating scale for pain

Trials and Modalities

- Outcome *Peng, Ying, Chen, & Sun (2015):
  - Study indicated that massage therapy could potentially reduce the anxiety level of CV PCI patients

Trials and Modalities

- n=117 Evaluated the effect of holistic care involving physical touch and conditioning on mental stress in cardiac surgery patients

  *Rosenfeldt et al., (2011)

Trials and Modalities

- Measures *Rosenfeldt et al., (2011)
  - Randomization into two groups
    - Usual care
    - Two 60 minute therapist guided physical conditioning sessions and four individualized 60 minute mental stress reduction sessions

Trials and Modalities

- Quality of life measures obtained via Short Form 36 Item Health Survey Questionnaire (SF-36) administered at baseline, immediately postoperatively, and six weeks after surgery

- Limitations/Strengths
  - ZERO patients lost in follow up
  - Modality slightly different than other therapeutic touch studies and not well defined. Therefore cannot be directly compared.

*Rosenfeldt et al., (2011)

Trials and Modalities

- Outcome *Rosenfeldt et al., (2011):
  - Although quality of life was significantly improved six weeks after surgery, there was no significant change overall.
  - Warrants further research.

Special Considerations

- Limitations of rigorous research on massage therapy
  - Blinding patients to treatment
  - Finding an acceptable control intervention
  - Avoiding self selection bias by participants

Trials and Modalities

- 3 Studies examined use of music therapy
- n=207 Examines effect of music therapy as related to anesthesia requirements in ambulatory breast surgery for cancer as a measure of anxiety.

  *Palmer, Lane, Mayo, Schlucter, & Leeming (2015)

Trials and Modalities

- Measures *Palmer, Lane, Mayo, Schlucter, & Leeming (2015):
  - Self assessed rating on the Global Anxiety Visual Analog Scale (GA-VAS)
  - Bispectral Index monitoring (external monitor placed on patient's forehead)
  - Measurement of "recovery time" defined as the interval surgery and meeting discharge criteria
  - Five item verbal questionnaire measuring satisfaction

Trials and Modalities

- Patients were randomized into three groups:

  *Palmer, Lane, Mayo, Schlucter, & Leeming (2015)

  - (LM) Patient selected live music preoperatively with therapist selected recorded music intraoperatively
  - (RM) Patient selected recorded music preoperatively with therapist selected recorded music intraoperatively
  - (UC) Usual care preoperatively with noise blocking earmuffs intraoperatively

Trials and Modalities

- Outcome:

  *Palmer, Lane, Mayo, Schlucter, & Leeming (2015)

  - NO significant difference in amount of sedative required
  - LM and RM groups reported greater reduction in anxiety
  - NO difference in recovery time between LM/RM and UC, but LM had shorter recovery time than RM

Trials and Modalities

- NO significant difference in satisfaction scores

This suggests that music therapy may be included as a complementary modality as a way to reduce anxiety and promote comfort.

*Palmer, Lane, Mayo, Schlucter, & Leeming (2015)

Trials and Modalities

- n= 112 Examined the effect of music intervention on perceived anxiety in patients receiving either inpatient orthopedic or cancer treatments

  Eckhouse et al., (2014)

Trials and Modalities

- Measures * Eckhouse et al., (2014):
  - Randomization into three groups
    - **MFR** – Music focused relaxation (20 minute CD)
    - **MV** – Music video
    - **Control group**

Trials and Modalities

- *Trial used a pretest/posttest design using the State-Trait Anxiety Inventory (STAI)
- Outcome *Eckhouse et al, (2014):
  - No statistically significant differences in the perceived anxiety between the three groups.

Trials and Modalities

- n= 373 Examined the effect of music intervention on anxiety in mechanically ventilated patients

*Chlan et al., (2013)

Trials and Modalities

- Measures Chlan et al., (2013):
  - Randomization by computer into one of three groups
    - **PDM** - Patient directed music intervention
    - **HP** - Active control with noise abating headphones only
    - **UC** – Usual ICU care

Trials and Modalities

- Data from day of admission abstracted to obtain APACHE III (Acute Physiology, Age, & Chronic Health Evaluation) score, which was used as a covariate to control for illness severity

- Anxiety self assessment reported at entry and daily thereafter using 100 mm VAS-A

- Record of sedative exposure (intensity and frequency)

*Chlan et al., (2013)

Trials and Modalities

- Environmental Scan (developed for this study) – paper/pencil form used to collect data on overall activity level in room during each shift

- Outcome:
  - PDM = greater reduction in sedation frequency than UC or HP and greater reduction in sedation intensity than UC

*Chlan et al., (2013)

Why is this relevant?

- Sensory Modification Techniques:
  - Are cost effective.
  - Are non invasive.
  - Are easily generalized.
  - Are time efficient.
  - Gives some control back to the patient.

Why is this relevant?

- MOST of all, sensory modification techniques are a **SAFE** alternative to pharmacological management of sleep, anxiety, and pain in hospitalized patients.

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Questions?