Apr 25th, 2:45 PM - 3:45 PM

Exploring Radon Exposure Therapy for the Control of Chronic Pain

Rowan van Brandt
Carroll College, rvanbrandt@carroll.edu

Angela L. Tacey
Carroll College, atacey@carroll.edu

Follow this and additional works at: https://scholars.carroll.edu/surf

Part of the Occupational and Environmental Health Nursing Commons, Other Nursing Commons, and the Public Health and Community Nursing Commons

van Brandt, Rowan and Tacey, Angela L., 'Exploring Radon Exposure Therapy for the Control of Chronic Pain' (2019). Carroll College Student Undergraduate Research Festival. 127.
https://scholars.carroll.edu/surf/2019/all/127

This Event is brought to you for free and open access by Carroll Scholars. It has been accepted for inclusion in Carroll College Student Undergraduate Research Festival by an authorized administrator of Carroll Scholars. For more information, please contact tkratz@carroll.edu.
### Research Question: In patients with chronic pain, how does radon exposure therapy (RET) compared to no radon exposure therapy affect pain control?

### Background:
- **Potential benefits:** decreased pain and inflammation increased range of motion (ROM).
- **Potential risks:** non-regulated in the USA vs. regulated in Europe; carcinogenic; tumor growth.
- **Why are we looking at RET for chronic pain:** Due to growing population of chronic pain sufferers and rising concerns with traditional medicines, nurses need to understand the risks and benefits to complementary therapies that people may use to help control their pain, so appropriate education can be provided to the patients while monitoring for side effects.
- **Key term: Radon Exposure Therapy (RET):** A complimentary or alternative medicine (CAM) using the intake of radon gas either ingested (in food or water) or inhaled (in living space). It is thought to increase bone density, decrease pain and inflammation, and decrease range of motion due to reduced pain threshold.
- **Key term: Chronic Pain:** "Chronic or recurrent pain lasting longer than 6 months and with [average] pain rating of 3 or more" (on numeric scale 1-10) (2013).

### Article

<table>
<thead>
<tr>
<th>Description</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level II randomized, blind, and controlled study with longitudinal aspects. 652 people with chronic pain conditions participated, and were divided 50/50 between experimental (received radon infused water) and control (received water without radon) groups. Each group participated in immersion therapy affect pain control?</td>
<td>&quot;A significant superiority regarding pain relief was seen after radon spa therapy during the total course of observation... Rates of patients with significantly reduced post-treatment intake of [pain medication] were 47% after radon compared to 34% after control treatment... No significant group differences regarding the physical and mental components of quality of life were found&quot; (2013).</td>
</tr>
<tr>
<td>Level IV: longitudinal cohort study. Completed in Germany and including 32 participants that engaged in RET, the researchers looked at markers in blood samples from the participants that were related to bone metabolism and inflammation as they’re related to musculoskeletal disorders. The RET regimen included 9 exposures over 3 weeks and the blood samples were taken via venipuncture before, during, after, and then 4 additional times up to 30 weeks after (2017).</td>
<td>&quot;The results are in-line with pain reduction and systemic immune effects ... [however] further investigations on local cellular processes in inflamed joints after radon therapy are needed&quot; (2017). It was further noted that RET can potentially increase tumor size and &quot;may contribute to a tumor permissive microenvironment&quot; (2017).</td>
</tr>
<tr>
<td>Level IV: small pilot cohort study. 21 volunteers were recruited from attendees of the Free Enterprise Radon Health Mine, Boulder, MT. Using a standardized measurement scale, Erickson measured the range of motion (ROM) of a joint as it was limited by pain. A total of three measurements were taken. The first was baseline prior to starting the RET, the second was half-way through their treatment, and the final measurement was taken on the final day of RET, after their therapy was completed (2006).</td>
<td>&quot;Results of the study were mixed but show an overall pattern indicating some level of improvement&quot; (2006). Using ROM to measure pain is significant because it helps to give precise measurements for pain when this is not normally possible (2006).</td>
</tr>
<tr>
<td>Level III: non-randomized controlled pilot study. Completed in Poland and including 35 participants that engaged in RET and 15 that were a control group, the researchers looked at serum total antioxidant status (TAS) through blood samples as it related to degenerative joint disease. The researchers performed radon parameter measurements every day during the 21 days and once a month for 3 months before the experiment was conducted. The RET regimen consisted of 15 exposures in 18 days, and the blood samples were taken via venipuncture before each patient began and after the exposures were completed (2 full treatment) (2013).</td>
<td>&quot;In the study group, an increase in the level of TAS in the 18th day of treatment was demonstrated. In the control group ... [the] TAS level dropped below the output level&quot; (2018). However, the P-value for the results in both groups &quot;were not significant&quot; (2018). The authors noted that RET is a governmentally and medically regulated therapy in Poland, and noted that their results were likely due to the small group size. (2018).</td>
</tr>
</tbody>
</table>

### Cumulative Results:
- The results of this evidence-based practice brief are inconclusive due to a lack of supporting evidence specifically on RET's direct impacts on chronic pain.
- While one study showed hopeful results toward RET's effects on chronic pain control when used in conjunction with other therapies, the remaining three studies were not focused on pain as an indicator of successful RET, resulting in an inability to make any inferences toward such a conclusion.
- There is currently a lack of data specifically related to RET and its effects on chronic pain as a specific research item rather than a by-product of other research focuses.

### Application to Nursing
- **Design a causality, retrospective, cohort study to analyze data of a minimum of 1000 participants that have used RET for at least 20 full courses of treatment and their rates of lung cancer.** Exclusion criteria would be for other exposed risks such as tobacco use or living in high pollution areas. This study would help to either support or oppose the theory that RET increases the risk of developing lung cancer.
- **Put together an informational leaflet, design and maintain a website outlining what RET is, why it is used, when it may be therapeutic, contraindications of use (i.e. pregnancy or during treatment for malignancy) and what to assess for as a nurse and advanced level provider.** Including, but not limited to decreased need for prescribed pain medication or signs and symptoms of lung cancer.
- **Hand out the above informational leaflet, with the website address, to pain management clinics, cancer clinics, arthritis specialists, doctors that specialize in working with older people.**

---

**This work is not original. This is an evidence-based practice brief that includes published research conducted by professionals. Guidance was provided by Stephanie Burkholder, professor of NU 307: evidence based practice research methods.**