Impact of Cuff Over Inflation on Blood Pressure Readings in Adults

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Clinical Relevance
⦁ Over inflating the blood pressure cuff may lead to significantly elevated systolic readings.
⦁ Cuff inflation level for manual blood pressure assessment needs to be standardized.
⦁ Participants with higher BMI have a greater incidence of inaccurate readings with increasing cuff inflation level

Objective
To determine the effects of cuff over inflation on blood pressure readings compared to the standardized 20 mmHg above the loss of Korotkoff sounds when taking manual BP in adults.

Purpose
⦁ Physical therapists regularly use blood pressure (BP) readings when making clinical decisions.
⦁ Inaccuracies in BP readings may occur when not following standard procedure.
⦁ False or missed diagnoses of hypertension (HTN) may lead to improper medical management.

Methods
Data collection
⦁ Utilized American Heart Association (AHA) standardized positioning and procedures
⦁ Baseline BP measurement taken using standard cuff inflation of 20 mmHg above loss of systolic Korotkoff sounds
⦁ BP measured three subsequent times inflating the cuff to 40, 60, 80 mmHg above the loss of Korotkoff sounds in randomized order

Data Analysis
⦁ Friedman’s ANOVA performed to analyze differences in BP measurements
⦁ Point biserial correlation performed to determine effects of demographics on change in BP measurements

Results
⦁ Significant difference found in systolic readings between standardized measurement and cuff inflation level of ≥60 mmHg above loss of Korotkoff sounds
⦁ Significant correlation found between body mass index (BMI) and BP change

Conclusions
⦁ Over inflating the blood pressure cuff created statistically significant differences in BP readings as compared to standard procedures.
⦁ Higher cuff inflation levels impact accuracy of clinical decisions.
⦁ Participants with higher BMI have a greater incidence of inaccurate readings with increasing cuff inflation level

Participants
109 adult participants recruited at the MN State Fair on August 28, 2019

Demographics Summary

<table>
<thead>
<tr>
<th>Variable</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Gender: Female</td>
<td>63.3%</td>
</tr>
<tr>
<td>Age: 45+</td>
<td>70.7%</td>
</tr>
<tr>
<td>Race: Caucasian</td>
<td>90.8%</td>
</tr>
<tr>
<td>BMI ≥ 30</td>
<td>61.4%</td>
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</tbody>
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References