H109 In Vivo Facial Tissue Depth Measurements of African Nova Scotian Children for 3-D Forensic Facial Reconstruction

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After attending this presentation, attendees will be aware of groundbreaking research that has expanded the facial tissue depth data to include African Canadians. They will also learn the significance of collecting data that is specific for similar ancestral populations living in different geographical regions.

This presentation will impact the forensic science community by increasing the facial tissue depth data available in Canada to include African Canadians, and thus helping forensic artists generate more accurate 3-D forensic facial reconstructions. Consequently, a more accurate facial reconstruction will increase the likelihood of recognition and positive identification. As a result, this research will impact humanity by providing data that may help alleviate the psychological, emotional, and physical suffering endured by relatives and friends of missing persons.

The purpose of this research is to expand the facial tissue depth data available in Canada to include African Canadians. Population specific facial tissue depth data helps increase the accuracy of three dimensional forensic facial reconstructions as well as the chance for establishing a positive identification for unknown individuals. Specifically, this study involves collaborating with the African Nova Scotian community to create the first African Canadian tissue depth database to help identify missing children of African Nova Scotian descent.

The specific goals of this research are to: (1) report standard summary statistics, including means, standard deviations, and ranges of tissue thicknesses for both sexes and varying sub-adult age groups; (2) determine if there is a relationship between age and tissue thickness for males and females; (3) determine if there are significant differences of facial tissue depths between and within sexes of differing sub-adult age groups; (4) compare the results of this study to contemporary data for African American children (Manhein et. al., 2000); and, (5) provide sonographic training for African Nova Scotian students.

This study utilizes ultrasound technology to collect the facial tissue depth measurements since it is the most accurate method of measuring tissue depth; it is non-invasive, safe, and portable. Tissue depth measurements are collected from fifty living volunteers of African Nova Scotian descent. Participants included males and females between three and 18 years of age. Height and weight were recorded and photographs of the front and right side were taken of each participant. To maintain consistency in locating the nineteen anatomical landmarks on living individuals, the protocol developed by Manhein and colleagues (2000) was followed.

The participant was seated in the upright position, facing forward, with facial muscles and jaw relaxed. The transducer was coated with a non-allergenic gel and lightly applied to the skin at a 90° angle to the underlying bony landmark. To prevent depression of the soft tissues, the gel was the only substance in contact with the skin.

The participant remained still while the measurement was being taken to ensure an accurate reading. Once the coated transducer was in the correct position, the image was frozen on the monitor and the participant was able to relax for a few moments prior to the next measurement. An ultrasound output was generated and the depth of the soft tissue was measured using calipers built into the computer system. This process was then repeated for all nineteen anatomical points. Averages of each point were taken for males and females of specific age groups and a reference table was generated. Statistical analyses were used to analyze the data. Results and preliminary findings will be presented.

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African Canadian, Tissue Depth, Facial Reconstruction