



Forensic Anthropology Population Data

Forensic age estimation in anti-piracy trials in Seychelles: Experiences and challenges faced



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ABSTRACT

Forensic age estimation (FAE) was conducted using a multifactorial method on thirteen Somali detainees claiming juvenile status during the anti-piracy trials of the Seychelles Supreme Court in 2014/2015. A multidisciplinary team, comprising of four of the authors covering specialties in forensic medicine, forensic odontology and radiology, conducted the FAE using a five-stage protocol. Each detainee was interviewed with an interpreter and examined for disorders affecting dental/skeletal development and for assessment of genital development through Tanner staging. Dental maturity was assessed clinically and radiologically. Eruption stage was assessed using Olze et al. and mandibular third-molar maturity was assessed using Demirjian's classification. Skeletal maturity was assessed from hand-wrist X-rays according to Greulich & Pyle and from CT-clavicle according to Kellinghaus et al. and Schultz et al. Interpretation of findings was done using reference population data from similar ethnic and social backgrounds wherever possible. Final age-ranges were calculated by combining dental and clavicle maturity stages using the regression formula developed by Bassed et al. followed by a 10% correction factor. The team later testified on their findings under cross-examination.

The protocol adopted by the authors increased the scientific validity of the findings and was useful in addressing cross-examination queries on exclusion of developmental disorders, ethnic/socioeconomic variability and maintaining chain of custody. Unforeseen jurisdictional and practical limitations were experienced but did not affect the outcome. Combining dental and clavicle developmental data provided the court with a much clearer picture on the likelihood of the detainees' juvenile status which emphasizes the importance of conducting more population studies using combinations of different developmental sites. The authors note that available reference data is mostly from affluent populations whereas FAE is mostly required in individuals from less-developed regions. Regional networks that collate and share population-specific data need to be established to overcome these limitations.

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1. Introduction

Forensic Age Estimation (FAE) on living individuals has received much attention due to numerous challenges, limitations, ethical and humanitarian issues that are interwoven with determining the age of an individual who has no documentary evidence of his or her date of birth [1–6]. These issues have been predominantly discussed in relation to unaccompanied minors seeking asylum

status. However FAE in the living has a significant bearing in many other civil and criminal cases as well.

Various methods for age assessment have been introduced which could be broadly categorized as social assessments (commonly referred to as Merton compliant age assessments) [7–9] and medical assessments [10,11]. Social assessments require detailed interviews to assess the credibility of the claimed age and maturity of the individual. Medical assessments analyze the physical development of the body using various biological parameters which are then compared with normal standards derived through population studies. Neither of these methods have shown absolute precision in FAE and there is no uniform practice that has been established [4,3,12–14]. Different jurisdictions even

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within the same region adapt different approaches in age assessment [15].

Even in medical assessments there is consensus that FAE should not be based on a single assessment tool but on a combination of information derived through multiple tools including clinical, skeletal and dental assessments focusing on multiple developmental sites [12,16,17]. Current guidelines on FAE in living subjects published by the international and interdisciplinary study group on forensic age diagnostics (AGFAD) recommend the use of a multifactorial approach involving [16,18];

- Physical examination
 - Anthropometric measurements
 - Sexual maturity
 - Identification of developmental disorders
- X-ray left hand
- Dental examination including X-ray
- If skeletal maturity of hand is complete, imaging of clavicle

This article reviews an FAE project conducted by the authors using a multifactorial method to assess the ages of thirteen Somali detainees during the Anti Piracy Trials in Seychelles in 2014/2015. The methodology used, experiences and gaps identified are discussed.

2. Project description

2.1. Background

Piracy was a major maritime crime around the Western border of the Indian Ocean and the Arabian Sea for a considerable period [19–21] (Fig. 1). These pirates were predominantly from Somalia and they would sail out in small boats targeting mostly commercial tankers and ships that sail around the horn of Africa [22,23].

In late 2013 and early 2014, two separate groups of Somalian males were apprehended on suspicion of piracy in the Indian Ocean and detained in Seychelles. Thirteen of these detainees (5 from Group 1 and 8 from Group 2) claimed to be juveniles (less than 18 years of age). As there was no documentary proof of their

date of birth/age, the Seychelles Supreme Court requested medical assistance in estimating their ages.

In March 2014, a team comprising of four of the authors (two forensic specialists, a radiologist and a forensic odontologist) were authorized via court order to conduct FAE on these thirteen individuals. The project was carried out at the Victoria Hospital, Seychelles and was coordinated by the United Nations Office of Drugs and Crimes (UNODC) as part of their counter piracy program [24].

2.2. Methodology

A five-stage protocol was adopted (Fig. 2).

2.2.1. Stage I—preliminary procedures

A pre-project discussion was held with officials from Attorney-General's department, police and probations office to discuss logistical and administrative issues. During this meeting it transpired that obtaining anthropometric measurements from the detainees was not possible as it contravened regulations within the Seychelles Criminal Procedure Code. There were no restrictions on visual inspection, palpation, photography and radiological imaging.

The detainees were briefed regarding the FAE process and especially the use of photography and radiological imaging. Informed written consent was obtained from each detainee in the presence of probationary officers. Communication with the detainees was facilitated through a court-designated Somali interpreter.

2.2.2. Stage II—history & clinical examination

Each detainee was interviewed and examined in a private setting by the two forensic specialists. Information was recorded on their claimed age including availability of any evidence to support their claims, background information on level of education, occupation, ethnicity and hand-dominance. Past medical history was obtained focusing on symptoms of chronic illnesses, long-term medication, drug and narcotic abuse, dental or clavicle trauma.

General and systemic examination focused on identifying any signs of nutritional disorders, endocrinopathies or chronic diseases that could accelerate or delay bone and/or dental maturation. Sexual maturity using Tanner staging [25] of pubic hair and external genital development was recorded based only on inspection. Frontal views of each detainee were photographed.

2.2.3. Stage III—dental assessment

The dental examination comprised of a clinical and a radiological examination by the forensic odontologist. Each tooth was examined for developmental abnormalities and attrition. Based on the clinical examination the mandibular third molar teeth were selected as the indexed teeth. Photographs of the dentition were taken. Parameters assessed in the mandibular third molar teeth were the eruption status according to the Olze's classification [26] and tooth developmental stage based on Demirjian's classification [27]. Intra-oral periapical (IOPA) radiographs of mandibular third molar teeth were acquired as facilities for orthopantomogram (OPG) were not available. Radiological staging was independently confirmed by a second odontologist specialized in dental radiology.

2.2.4. Stage IV—skeletal assessment

Skeletal age was assessed by the radiologist commencing with a digital x-ray of the non-dominant hand. If the x-ray showed completed maturity according to standards specified by Greulich & Pyle [28], then a CT scan was done to assess the maturation of the

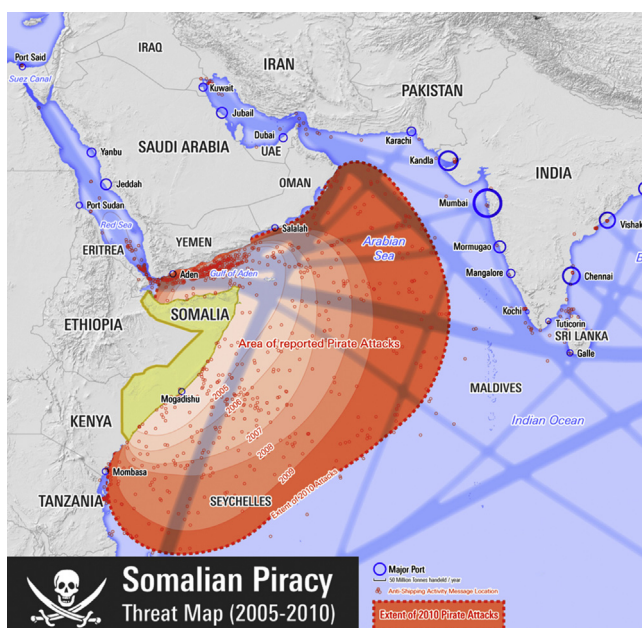


Fig. 1. Piracy around the western border of the Indian Ocean.

Image source: en.wikipedia.org/wiki/Piracy_off_the_coast_of_Somalia.

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