

3.2.2. Imprecision, margins of error and factors affecting age assessment results

For its part, the CRC Committee has repeatedly warned against exclusive reliance on methods such as bone and dental examinations, which can be inaccurate, have wide margins of error and may be traumatic or trigger unnecessary legal processes. It has consistently considered X-ray evidence, particularly when based on the G&P Atlas, to be imprecise. In *A.L.* v *Spain* (31 May 2019, paras 12(4), 12(5) and 12(6)) and *A.D.* v *Spain* (4 February 2020, paras 10(11) and 10(12)), the committee noted that the applicants had undergone only an X-ray of the left hand. Using the G&P Atlas, their bone ages were assessed as over 19 years and between 18-19 years, respectively, without any margin of error being specified.

In *R.K.* v *Spain* (18 September 2019, paras 9(5) and 9(6)) and *C.O.C.* v *Spain* (29 January 2021, paras 8(10) and 8(11)), applicants held in migrant detention underwent wrist X-rays which were assessed using the G&P Atlas and panoramic dental X-rays, again without a specified margin of error. In *S.M.A.* v *Spain* (28 September 2020, paras 7(9) and 7(10)), the applicant underwent a triple bone test (wrist, clavicle and dental X-ray examinations). In these cases, the committee found violations of Articles 3 and 12 of the Convention on the Rights of the Child because the procedures lacked sufficient safeguards, failed to respect the best interests of the child and were unsuitable as the sole method of determining chronological age.

At the national level, several courts, including the French Constitutional Council (21 March 2019), the French Court of Cassation (12 January 2022), the Swiss Federal Administrative Court (4 March 2019), Norwegian courts and the Czech Constitutional Court, have addressed the imprecision of medical age assessment methods. In line with international human rights case law, national courts have required a margin of error to be clearly stated, insisted on comprehensive assessments of all available evidence and have often applied the benefit of the doubt when results conflict *(see Section 4)*.

Norwegian courts have long recognised the methodological limitations of imaging-based methods because of the natural variation in skeletal and dental development. In proceedings concerning five undocumented Afghan applicants claiming to be minors, the Oslo District Court (30 November 2017) took into account these limitations as noted by the Norwegian Paediatric Association, in particular concerning the G&P Atlas. On appeal, the Court of Appeal (29 April 2019) further acknowledged that the G&P Atlas had been developed in the 1930s using a sample of white, middle-class children from Ohio, which was not representative of the population of young asylum seekers. It also observed that the atlas had been designed to assess skeletal maturity in children of known age to predict growth potential, rather than to estimate

chronological age. Nevertheless, the Court of Appeal quashed the lower court's ruling and upheld the age classifications based on the statistical tool "BioAlder", emphasising that the assessments did not rely solely on the G&P Atlas and Demirjian's stages of third-molar development. Rather, these methods were used to establish developmental stages, which were then interpreted through "BioAlder", regularly updated against reference data linking developmental stages to known chronological ages and incorporating safety margins. This decision was later confirmed by the Supreme Court (12 December 2019).

For its part, the Czech Constitutional Court (7 July 2021) ruled on procedural guarantees surrounding an age assessment in which both the G&P Atlas and the TW3 method were used. As in *Darboe and Camara v Italy*, the G&P method estimated the applicant's age at 18, while the TW3 method estimated 16. Despite this discrepancy, the examining doctor relied on the G&P result, arguing that the TW3 method was unsuitable since it could only estimate up to a maximum of 16.5 years. The Constitutional Court referred to the EUAA's Judicial Analysis on Vulnerability (pp. 51-55), the case law of the Supreme Administrative Court and the CRC Committee General Comments,31 emphasising the limited accuracy of bone age testing, particularly when applied to individuals from non-European backgrounds. Making a point similar to that made in the Norwegian rulings, it recalled that these methods rely on comparative data, which must be interpreted considering the subject's socioeconomic and geographical origins. In this case, despite the Czech Supreme Administrative Court consistently stressing the low informative value of these methods, it gave greater weight to the G&P estimate, contradicting its own case law, which had previously favoured the TW3 method for being more accurate. Finding that the age assessment had not been conducted with adequate guarantees, the Constitutional Court partially upheld the applicant's appeal.

The importance of considering genetic and geographical backgrounds, as well as developmental factors that may affect age assessment results, also appears in Austrian, German and Swiss case law, which have highlighted the value of combining imaging-based methods to reduce variability, as further discussed below.

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  UN Committee on the Rights of the Child (1 September 2005). General Comment No 6: Treatment of Unaccompanied and Separated Children Outside their Country of Origin, CRC/GC/2005/6; UN (16 November 2017). Joint general comment No 4 (2017) of the Committee on the Protection of the Rights of All Migrant Workers and Members of Their Families and No 23 (2017) of the Committee on the Rights of the Child on State obligations regarding the human rights of children in the context of international migration in countries of origin, transit, destination and return, CMW/C/GC/4-CRC/C/GC/23.

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