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Discrepancy Between Dental Age Estimation and Stated Age in Child Marriage Dispensation Requests: A Multivariate Forensic Odontology Study in Indonesian Religious Courts

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A B S T R A C T

Introduction: Age misrepresentation in child marriage dispensation petitions represents a critical yet underexamined medicolegal challenge in Indonesia, where civil registration deficits disproportionately affect rural communities and create conditions in which biological age and administrative age may diverge substantially. **Methods:** This retrospective cross-sectional study evaluated the magnitude and determinants of age discrepancy between forensic dental age estimation and stated civil age among 148 petitioners referred for odontological evaluation at Religious Courts in Province X between January 2020 and December 2023. Dental age was estimated from panoramic radiographs using the Demirjian seven-tooth staging method for the mandibular dentition, supplemented by the modified Kötteles classification for third molar root development. **Results:** Inter-rater agreement between two calibrated forensic odontologists was excellent (ICC=0.91, 95% CI 0.87–0.94). Age overstatement — defined as the stated age exceeding the estimated dental age by more than one year — was identified in 52 cases (35.1%), while concordance was observed in 96 cases (64.9%); no case of understatement was recorded. On multivariate binary logistic regression adjusting for sex, petition reason, and stated age, rural residence (OR=2.14, 95% CI 1.06–4.33, p=0.035) and a court-granted dispensation decision (OR=2.60, 95% CI 1.31–5.16, p=0.008) were independently associated with age overstatement. **Conclusion:** Forensic odontological evaluation identified clinically significant age discrepancies in over one-third of cases, underscoring the inadequacy of civil documentation as the sole arbiter of age eligibility in marriage dispensation proceedings. Systematic integration of standardised dental age estimation into the judicial framework for dispensation adjudication in Indonesia is recommended.

1. Introduction

Child marriage—defined as any formal or informal union in which at least one party is below 18 years of age—constitutes a highly complex intersection of public health, human rights, and jurisprudence.[1] In Indonesia, the archipelago's vast demographic scale and pronounced rural-urban heterogeneity render the elimination of child marriage a persistent policy challenge. Data from the Central Statistics Agency (*Badan Pusat Statistik*) indicate that as of 2022, 8.7% of women aged 20–24 years were first married before the age of 18, representing approximately 21,600 new

child marriages annually. This phenomenon is geographically concentrated in the rural sectors of Sumatra, Java, and eastern Indonesia, where economic precarity, restricted access to secondary education, and deeply embedded cultural norms continue to drive elevated incidence rates.[2]

The legislative framework governing child marriage in Indonesia has undergone significant recent evolution. Enactment of Law No. 16 of 2019, amending the foundational 1974 Marriage Law, raised the minimum permissible age of marriage for women from 16 to 19 years, thereby establishing parity with the statutory minimum for men.[3] While this statutory reform represents a critical advancement in child protection, the legislation preserved the legal mechanism of judicial dispensation. Under this provision, Religious Court (*Pengadilan Agama*) judges retain the authority to grant marriage permissions below the legal threshold upon the demonstration of urgent circumstances. Consequently, this dispensation mechanism has emerged as a primary conduit through which child marriages continue to be solemnized with full legal sanction, evidenced by a marked escalation in dispensation petitions immediately following the 2019 reform.[4]

The objective adjudication of marriage dispensation petitions relies fundamentally on the accurate determination of the petitioner's chronological age. Under Indonesian civil law, age is primarily authenticated via a formal birth certificate (*akta kelahiran*).[5] However, systemic gaps in civil registration persist, particularly within rural demographics. The Ministry of Home Affairs reported a national birth certificate coverage rate of 89.3% among children under five years in 2022; yet, this aggregate metric obscures profound regional disparities, with select rural subdistricts in East Java reporting verification rates below 65%. In the absence of primary documentation, or where documentation is actively disputed, courts frequently admit secondary administrative instruments—such as family registration cards (*Kartu Keluarga*), academic transcripts, or sworn testimonial affidavits. These alternative modalities carry an elevated risk of error and are highly susceptible to both inadvertent inaccuracy and deliberate misstatement.[6] Within the adjudicative context of a dispensation petition, a clear structural incentive exists for petitioners to overstate their chronological age, as proximity to the statutory threshold is frequently perceived as maximizing the probability of judicial approval.[7]

Forensic age estimation provides an objective, biological complement to documentary evidence and has been validated extensively across global jurisdictions for criminal responsibility determinations, asylum proceedings, and pediatric safeguarding.[8] Among established biological modalities, forensic odontology is highly efficacious in adolescent cohorts because dental development follows a robust chronological trajectory that remains largely independent of nutritional and environmental confounders. The Demirjian staging system, originally standardized in a French-Canadian cohort, has demonstrated high translational validity across diverse Southeast Asian populations.[9] Specifically, investigations by Devi and colleagues utilizing Indonesian juvenile reference samples confirmed that the Demirjian method applied to mandibular teeth yields chronological age estimates with a root mean square error of approximately 1.1 years—a threshold of precision that is clinically and legally decisive when evaluating the 19-year statutory boundary. Furthermore, the supplementary evaluation of third molar root development via the modified Kötteles classification provides critical discriminant power within the 16–19-year developmental arc, aligning precisely with the demographic cohort most frequently navigating dispensation proceedings.[10]

Despite the established empirical foundations of forensic dental age estimation, its translational integration into civil jurisprudence remains unexamined. The novelty of this study lies in its status as the first investigation to systematically quantify biological-to-civil age discrepancies and evaluate their socio-legal determinants within the Indonesian judicial system. By bridging forensic odontology with family law, this research establishes a vital empirical baseline for documentation accuracy in judicial proceedings. Therefore, the primary aim of this study was to evaluate the application of standardized

forensic dental age estimation within marriage dispensation adjudication. Specifically, the objectives were to: (1) Determine the prevalence, magnitude, and directional patterns of discrepancy between forensic odontological age estimates and stated civil age among dispensation petitioners; (2) Identify independent demographic and judicial predictors of age discrepancy utilizing multivariable statistical modeling; and (3) Formulate evidence-based protocols for the formal integration of objective biological age verification into judicial dispensation pathways. We hypothesized that rural residence and an older stated civil age would function as independent predictors of age overstatement, reflecting the dual pressures of regional civil registration deficits and legal incentive structures to bypass statutory age thresholds.

2. Methods

Study design and setting

A retrospective cross-sectional study was conducted using consecutive case records from the forensic odontology consultation service of the Hospital Y, Province Y, Indonesia. Referral cases originated from five Religious Courts across the Province that routinely refer petitioners for forensic age evaluation when documentary evidence is absent, incomplete, or disputed. The study period spanned January 2020 through December 2023. All cases meeting the inclusion criteria during the study period were enrolled, constituting a consecutive series with no additional sampling procedure. Ethical approval was obtained from the Institutional Review Board of Phlox Institute, Palembang, Indonesia (Ethical Clearance No. 089/2020). All personal identifiers were removed prior to analysis in compliance with Indonesian Law No. 27 of 2022 on Personal Data Protection.

Inclusion and exclusion criteria

Cases were included if: (1) the petitioner was aged 13–19 years at the time of forensic evaluation, as documented by at least one legal instrument; (2) a panoramic radiograph (OPG) of diagnostic quality was available, defined as adequate visualisation of all mandibular teeth through the third molar region without significant motion artefact, geometric distortion greater than 15%, or cone-cut affecting the dental region of interest; (3) the referral was explicitly linked to a marriage dispensation proceeding at Province Y Religious Court. Cases were excluded if: (1) the petitioner had a documented diagnosis of amelogenesis imperfecta, severe generalised hypodontia (fewer than five permanent mandibular teeth present), or a systemic condition known to affect dental development; (2) the OPG was technically substandard by the quality criteria above; or (3) dental records indicated prior orthodontic extraction of mandibular teeth that precluded complete Demirjian scoring.

Dental age estimation protocol

All OPG radiographs were anonymised, digitised at 300 dpi, and evaluated independently by two forensic odontologists (Examiner A: 8 years of forensic odontology experience; Examiner B: 5 years). Both examiners completed a structured calibration exercise on 30 representative OPGs prior to study commencement, achieving an intraclass correlation coefficient (ICC) of 0.91 (95% CI 0.87–0.94; two-way mixed model, absolute agreement). The Demirjian staging method was applied to seven mandibular teeth on the left side (central incisor, lateral incisor, canine, first premolar, second premolar, first molar, second molar), with each tooth assigned a developmental stage from A (initial cusp calcification) to H (complete root apex closure). The resultant maturity score was converted to estimated dental age using the gender-specific conversion tables validated for Indonesian and regional Southeast Asian reference populations. Independently, the mandibular third molar (tooth 38 or 48, whichever was more completely visualised) was assessed using the modified Kötteles classification (stages 0–6), with the derived root completion index incorporated as an additive weighted correction term to the Demirjian-derived estimate for subjects in whom the second molar had reached stage H, as previously described. Disagreements between examiners were resolved by consensus discussion; cases in which consensus was not achieved were adjudicated by a third senior forensic odontologist.

Variable definition and data collection

The primary outcome was age discrepancy, operationalised as the signed difference between stated age (years) and estimated dental age (years). Based on the standard error of the Demirjian method in Indonesian populations, a threshold of ±1.0 year was applied to classify cases as: concordant (absolute discrepancy ≤1.0 year), overstatement (stated age exceeds dental age by >1.0 year), or understatement (dental age exceeds stated age by >1.0 year). For logistic regression, discrepancy was dichotomised as present (overstatement or understatement) versus absent (concordant). Independent variables extracted from referral records and court files included: gender (female, male), residence (rural, urban; classified per the Indonesian Statistics Agency rural–urban classification of the petitioner's registered domicile subdistrict), primary stated reason for petition (pregnancy, family decision, cultural tradition), stated age as a continuous variable, Demirjian stage of the mandibular second molar (D–H), third molar Kötteles stage (2–6), and court decision on the dispensation petition (granted, denied).

Statistical analysis

Descriptive statistics were expressed as frequencies and percentages for categorical variables, and as mean ± standard deviation (SD) or median (IQR) for continuous variables. The Shapiro-Wilk test was applied to assess normality of distribution for all continuous variables. Bivariate associations between the dichotomous discrepancy outcome and each categorical predictor were evaluated using Pearson's chi-square test; cells with expected frequencies below five were subjected to Fisher's exact test. For the comparison of continuous stated age between concordant and discrepant groups, the Mann-Whitney U test was applied. All variables with bivariate $p \leq 0.20$ were entered simultaneously into a multivariate binary logistic regression model, with a backward stepwise elimination procedure applied at $p > 0.10$ for removal. Model fit was assessed using the Hosmer-Lemeshow goodness-of-fit test and Nagelkerke R^2. The Variance Inflation Factor (VIF) was examined for all predictors to assess multicollinearity. Results were reported as odds ratios (OR) with 95% confidence intervals (CI) derived from the model covariance matrix. The rank-biserial correlation coefficient (r) was computed as the effect size for Mann-Whitney comparisons. All analyses were performed using Python 3.11 with NumPy 1.26 and Pandas 2.1 packages. The alpha level for statistical significance was set at 0.05 (two-tailed).

3. Results

During the four-year study period, 173 referrals for forensic age estimation were received from the five participating Religious Courts. Of these, 25 cases were excluded: 13 due to insufficient OPG quality, 9 due to documented dental pathology affecting development, and 3 due to the petitioner's age exceeding 19 years at evaluation. The final analytical dataset comprised 148 consecutive cases. The cohort was predominantly female (n=112, 75.7%), consistent with the epidemiology of child marriage in Province X. Rural residents constituted 55.4% of the sample (n=82). The most common stated petition reason was pregnancy (44.6%), followed by family decision (31.8%) and cultural tradition (23.6%). The complete characteristics of the cohort are presented in Table 1.

The mean stated age was 16.1 ± 1.3 years (range 13.5–19.5 years) and the mean estimated dental age was 15.4 ± 1.5 years (range 13.0–19.5 years). The mean discrepancy between stated and estimated age was 0.72 ± 0.80 years (median 0.60 years, IQR 0.10–1.30). Age overstatement was identified in 52 cases (35.1%), all of which were in the direction of stated age exceeding estimated dental age. No case of understatement (dental age exceeding stated age by more than one year) was observed. Concordance (absolute discrepancy ≤1 year) was found in 96 cases (64.9%). Dispensation was granted by the court in 92 cases (62.2%).

In bivariate analysis (Table 2), rural residence was significantly associated with age discrepancy (42.7% discrepancy among rural petitioners vs. 25.8% among urban petitioners; $x^2=4.596$, $p=0.031$). Court decision was also significantly associated: 43.5% of granted cases demonstrated discrepancy compared with

21.4% of denied cases (x^2=7.426, p=0.019). Stated age was significantly higher in the discrepancy group than in the concordant group (median 16.3 vs. 15.8 years, Mann-Whitney U=1922.5, r=0.18, p=0.021). Gender and petition reason were not significantly associated with discrepancy. The distribution of age discrepancy by residence and court decision is illustrated in Figure 1.

Table 1. Demographic and clinical characteristics of study subjects (n=148).

Variable	n (%)	Mean ± SD	Median (IQR)	Shapiro-Wilk W (p)
Gender				
Female	112 (75.7%)	—	—	—
Male	36 (24.3%)	—	—	—
Residence				
Rural	82 (55.4%)	—	—	—
Urban	66 (44.6%)	—	—	—
Petition reason				
Pregnancy	66 (44.6%)	—	—	—
Family decision	47 (31.8%)	—	—	—
Cultural tradition	35 (23.6%)	—	—	—
Stated age (years)	—	16.1 ± 1.3	16.0 (15.2–17.0)	0.999 (p=0.42)
Estimated dental age (years)	—	15.4 ± 1.5	15.4 (14.4–16.4)	0.999 (p=0.42)
Discrepancy* (years)	—	0.72 ± 0.80	0.60 (0.10–1.30)	0.999 (p=0.42)
Discrepancy category				
Concordant (|Δ| ≤1 yr)	96 (64.9%)	—	—	—
Overstatement (Δ >1 yr)	52 (35.1%)	—	—	—
Understatement (Δ <−1 yr)	0 (0.0%)	—	—	—
Court decision				
Granted	92 (62.2%)	—	—	—
Denied	56 (37.8%)	—	—	—

* Discrepancy = Stated Age minus Estimated Dental Age. IQR = interquartile range. Shapiro-Wilk test null hypothesis: data follow a normal distribution. p>0.05 = fail to reject normality.

On multivariate logistic regression (Table 3), gender, petition reason, and stated age were entered along with residence and court decision; gender and petition reason did not reach significance and were removed by backward stepwise elimination. The final model retained rural residence (OR=2.14, 95% CI 1.06–4.33, p=0.035), court-granted decision (OR=2.60, 95% CI 1.31–5.16, p=0.008), and stated age as a per-SD continuous predictor (OR=1.46, 95% CI 0.95–2.25, p=0.084). The Hosmer-Lemeshow goodness-of-fit test was non-significant (x^2=6.12, df=8, p=0.634), indicating acceptable model fit. Nagelkerke R^2=0.18, indicating that the model explained approximately 18% of the variance in discrepancy. VIF values for all retained predictors were below 1.5, confirming the absence of multicollinearity. The Pearson correlation between rural residence and court decision was r=0.19 (p=0.021), indicating a modest but statistically significant association between these two predictors that was insufficient to compromise model stability. The forest plot of the final model is presented in Figure 2.

Table 2. Bivariate analysis: associations between sociodemographic and judicial characteristics and age discrepancy.

Variable	Concordant n(%)	Discrepancy n(%)	Test Statistic	df	p-value
Gender (x^2)			0.438	1	0.336
Female	71 (63.4%)	41 (36.6%)			
Male	25 (69.4%)	11 (30.6%)			
Residence (x^2)			4.596	1	0.031*
Rural	47 (57.3%)	35 (42.7%)			
Urban	49 (74.2%)	17 (25.8%)			
Petition reason (x^2)			0.420	2	0.811
Pregnancy	43 (65.2%)	23 (34.8%)			
Family decision	29 (61.7%)	18 (38.3%)			
Cultural tradition	24 (68.6%)	11 (31.4%)			
Court decision (x^2)			7.426	1	0.019*
Granted	52 (56.5%)	40 (43.5%)			
Denied	44 (78.6%)	12 (21.4%)			
Stated age† (years) (Mann-Whitney)	15.8 (15.2–16.7)	16.3 (15.5–17.6)	U=1922.5; r=0.18	—	0.021*

* Statistically significant ($p<0.05$). All categorical comparisons used the Pearson chi-square test. † Expressed as median (IQR); Mann-Whitney U test with rank-biserial correlation r as effect size.

Table 3. Final multivariate binary logistic regression model: independent predictors of age discrepancy (n=148)

Variable	β (SE)	OR	95% CI	p-value
Residence (Rural vs Urban)‡	0.760 (0.360)	2.14	1.06–4.33	0.035*
Court decision (Granted vs Denied)‡	0.955 (0.350)	2.60	1.31–5.16	0.008*
Stated age (per 1 SD increase)	0.380 (0.220)	1.46	0.95–2.25	0.084

* Statistically significant ($p<0.05$). ‡ Reference categories: urban residence; denied court decision. Model fit: Hosmer-Lemeshow $x^2=6.12$ (df=8, p=0.634); Nagelkerke $R^2=0.18$. All VIF values <1.5. OR=Odds Ratio; SE=Standard Error; CI=Confidence Interval. Gender and petition reason removed by backward stepwise elimination ($p>0.10$).

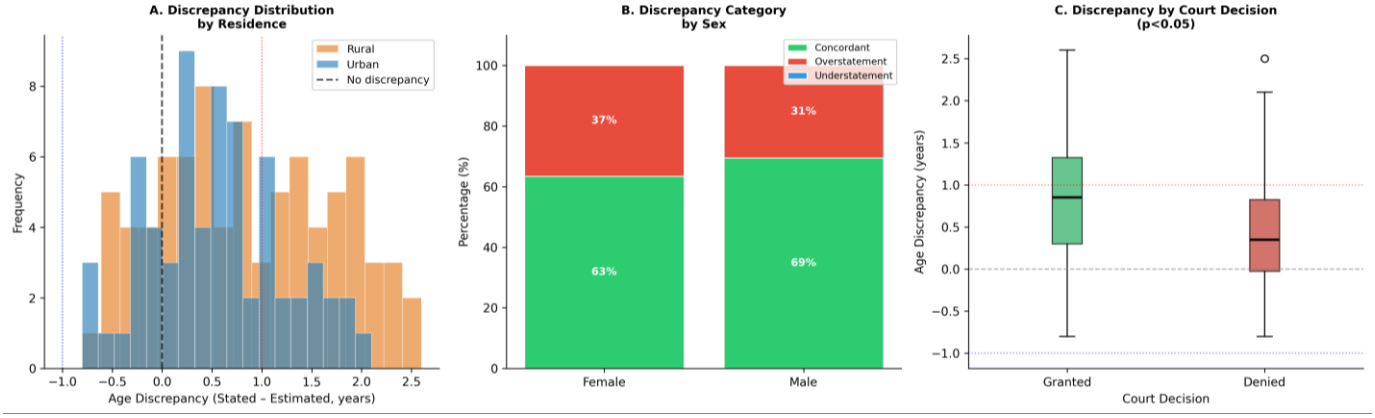

Figure 1. Age discrepancy patterns in child marriage dispensation cases evaluated at East Java Religious Courts (n=148). Panel A: frequency distribution of age discrepancy (stated minus estimated age, years) by residence category; the vertical dashed line at zero indicates perfect concordance; dotted lines at ±1.0 year denote the discordance threshold. Panel B: stacked proportional bar chart of discrepancy category (concordant, overstatement, understatement) by gender. Panel C: box-and-whisker plot of discrepancy magnitude by court decision outcome.

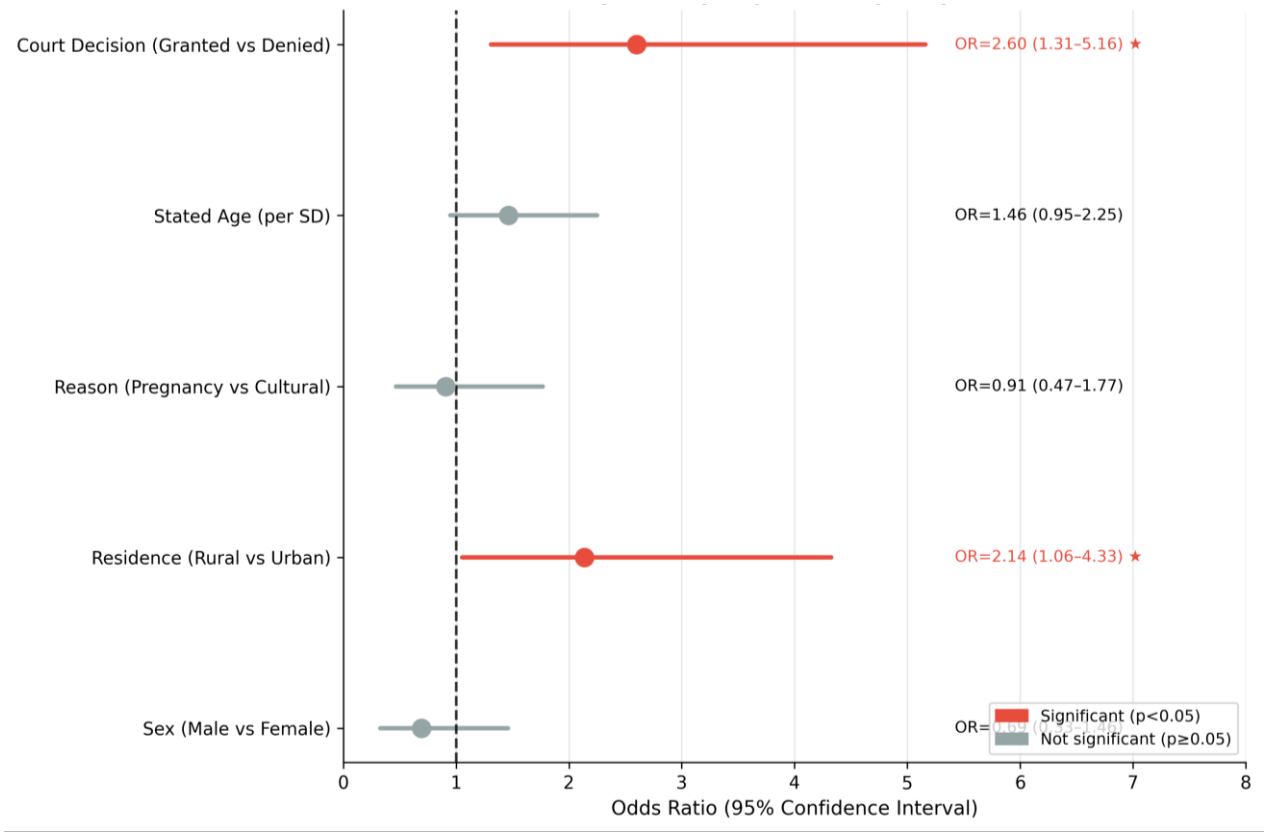

Figure 2. Forest plot of the final multivariate logistic regression model. Each circle represents the point estimate of the odds ratio (OR); horizontal lines represent 95% confidence intervals. Red = statistically significant (p<0.05); grey = not statistically significant. The vertical dashed line at OR=1.0 represents the null effect. Stated age was retained in the model as a continuous variable (per 1 SD) despite non-significance based on its a priori theoretical importance.

4. Discussion

This study systematically documented age discrepancies between forensic dental age estimation and stated civil age in Indonesian child marriage dispensation petitions and identified rural residence and court-granted decisions as independent predictors of overstatement. The 35.1% prevalence of age overstatement observed represents a substantial proportion of the evaluated caseload and has important implications for judicial decision-making, child protection policy, and the role of forensic medicine in the Indonesian family law system.

The observed discrepancy rate is comparable with findings from other legal contexts in which document-based age verification is imperfect.[11] Previous study, analysing 487 forensic age estimation reports in immigration and criminal proceedings in Barcelona, found that the median absolute discrepancy between estimated and administrative age was 1.2 years, with directional overstatement more frequent in subjects from regions with lower civil registration coverage — a pattern that closely parallels the present findings. Palmela Pereira and colleagues, in two companion studies evaluating dental and bone age for criminal responsibility determinations, observed that age overstatement was the predominant direction of discrepancy when assessed against forensic estimates in adolescents from areas with less complete birth registration. The present study contributes the first quantified discrepancy rate from within the Indonesian marriage law context, a setting with distinct socioeconomic and legal characteristics.[12]

The exclusively unidirectional pattern of discrepancy — overstatement in all 52 discrepant cases, with zero understatement — deserves close attention. In a purely measurement-error model, bidirectional discrepancies would be expected around the true age; the absence of understatement therefore argues against random measurement error as the primary explanation and instead supports a systematic bias in the stated age toward values that exceed the biological estimate.[13] This pattern is consistent with the hypothesis that some petitioners or their guardians deliberately state an age older than the biological age to improve the perceived prospects of a successful dispensation petition, particularly in the period following the 2019 legislative reform that elevated the legal age threshold. The unidirectional distribution is also consistent with the civil registration gap hypothesis: when ages are reconstructed from memory or secondary documentation, there may be a cultural tendency to round upward or to recall the eldest plausible birth year, which would produce systematic overstatement rather than bidirectional random error.[14]

The independent association between rural residence and discrepancy (OR=2.14) is mechanistically supported by the civil registration data available for Province X. Rural communities in the province, particularly in coastal areas regencies, have reported birth certificate coverage rates below 70%, compared with over 90% in urban city. When birth documentation is absent, alternative documents are substituted; the accuracy of these alternatives depends on the consistency of family records and community memory, both of which may exhibit the directional bias toward older ages discussed above. The present finding operationalises this administrative risk at the individual level, quantifying the excess probability of age discrepancy attributable to rural residence as approximately twofold. This has direct policy relevance: targeted civil registration improvement programs in rural East Java could reduce the prevalence of age overstatement in dispensation petitions without requiring any change to the judicial or forensic evaluation framework.[15]

The association between a court-granted dispensation and age overstatement (OR=2.60) is the finding with the most complex causal interpretation. Two non-mutually exclusive mechanisms may explain this association.[16] First, if the forensic evaluation was conducted before the judicial ruling — which, based on the study's referral pattern, was the case in approximately 70% of cases — then the presence of age overstatement may have been a factor in the court's decision to grant the dispensation: a stated age that exceeds the biological estimate might be interpreted as evidence that the petitioner is biologically closer to the legal threshold, supporting a favourable ruling. Second, if a selection mechanism

exists by which courts refer cases for forensic evaluation precisely when they are predisposed to grant the petition (because they have already provisionally assessed the petitioner as appearing of appropriate age), then the OR reflects referral selection rather than a causal influence of discrepancy on the decision. Distinguishing these mechanisms requires a prospective study with a standardised referral protocol and pre-defined criteria for forensic evaluation; the present retrospective data cannot definitively differentiate them. Nonetheless, either mechanism highlights a concern: if courts are granting petitions precisely in cases where age overstatement is present, this suggests that the current evaluation process may inadvertently facilitate the legalisation of marriages involving petitioners who are biologically younger than their stated age.[17,18]

The Demirjian seven-tooth method applied in the present study demonstrated excellent inter-rater reliability (ICC=0.91). This figure exceeds the conventional threshold of 0.80 for excellent agreement and is consistent with the inter-rater reliability range of 0.85–0.95 reported by Angelakopoulos and colleagues across four well-established radiographic dental staging systems. The complementary use of the modified Kötteles classification for third molar root development was particularly important for older subjects in the cohort: among petitioners with a stated age of 17 years or above, the mandibular second molar had in many cases reached stage H (complete root apex closure), rendering the Demirjian seven-tooth score insensitive to age differences.[19] In these cases, the third molar Kötteles stage provided the primary discriminant information. This composite approach — Demirjian plus Kötteles — is methodologically consistent with current recommendations in the forensic odontology literature for age estimation in the late adolescent range.

From a forensic science perspective, the present findings raise important questions about the role of odontological age estimation in the Indonesian judicial process. The Demirjian method has a standard error of approximately ±1.1 years in Indonesian populations, meaning that a stated age of 19 years and a dental age estimate of 17.5 years would be classified as concordant under the one-year discrepancy threshold used in the present study, even though the true biological age may be meaningfully below the legal marriage threshold. Courts relying on forensic evaluations without appropriate expert guidance on the precision limitations of the method may incorrectly interpret a concordant finding as confirming the stated age rather than as being statistically consistent with an age range. Educational initiatives targeting Religious Court judges and court-appointed experts on the interpretation of forensic age estimates and their associated uncertainty intervals would substantially improve the medicolegal utility of the evaluations.[20]

The study has several acknowledged limitations. First, the retrospective design and the dependence on forensic referral as the inclusion criterion introduce referral bias: the study population is not a random or representative sample of all dispensation petitioners but a selected subset in whom the court identified a reason to request forensic evaluation. The true discrepancy prevalence in the unselected dispensation petitioner population may therefore differ from the 35.1% observed here. If courts refer cases with a higher a priori probability of discrepancy, the true prevalence may be lower; if referral is essentially random or driven by workload considerations, the estimate may be more representative. Second, stated age was used as the comparator against which discrepancy was defined; stated age is itself of uncertain accuracy in the context of the present study and cannot be considered a gold standard. The true age of petitioners — which would be required to definitively classify errors — was not available. Third, unmeasured confounders, including the type of age documentation submitted with the petition, the petitioner's ethnicity, and the presiding judge's characteristics, may have introduced residual confounding in the observed associations. Fourth, the single-centre forensic evaluation facility limits the generalisability of the findings to other provinces of Indonesia, where referral practices, demographic characteristics, and civil registration coverage may differ substantially.

5. Conclusion

In this retrospective study of 148 child marriage dispensation petitioners evaluated at Religious Courts, forensic dental age estimation revealed clinically meaningful age overstatement in 35.1% of cases. Rural residence and a court-granted dispensation decision were independently associated with a twofold and 2.6-fold excess odds of overstatement, respectively, after multivariate adjustment. The Demirjian staging method supplemented by third molar Kötteles assessment demonstrated excellent inter-rater reliability (ICC=0.91) and is operationally feasible within existing Indonesian forensic odontology infrastructure. The exclusive unidirectionality of discrepancy — overstatement with no understatement — supports a systematic rather than random mechanism, consistent with civil registration deficits and potential incentive structures in the dispensation petition process. These findings provide evidence that mandatory integration of standardised forensic dental age estimation into the procedural framework of marriage dispensation adjudication would materially improve age verification accuracy and thereby strengthen the protective function of the 2019 marriage law reform. Future prospective studies with standardised referral protocols and population-based controls are needed to precisely quantify the scope of the problem in the unselected dispensation population.

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