

## SYSTEMATIC REVIEWS AND META-ANALYSIS

# Early sexual debut and associated factors among students in Ethiopia: A systematic review and meta-analysis

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## Abstract

Students with early sexual debut are exposed to risky sexual behaviours. For effective intervention on early sexual debut and its consequences, determination of its magnitude and identifications of associated factors is important. Therefore, this systematic review and meta-analysis aims to estimate the pooled prevalence and the associated factors of early sexual debut among students in Ethiopia. Relevant articles were identified through databases such as PubMed, Global Health, HINARI, Google advance search, Scopus, and EMBASE from March 10<sup>th</sup> to April 3<sup>rd</sup>. The data was extracted using a standardized data extraction form and exported to STATA 11 for analysis. The overall pooled prevalence of early sexual debut among students was estimated using a random-effects meta-analysis. Presence of association was determined using an odds ratio with a corresponding 95% CI. A total of 9 studies with 4,217 participants were involved in this meta-analysis. The estimated pooled prevalence of early sexual debut among students in Ethiopia was 27.53% (95% CI: 20.52, 34.54). Being female (OR: 3.64, 95% CI: 1.67, 5.61), watching pornography (OR: 3.8, 95% CI: 2.10, 5.50) and having boyfriend or girlfriend (OR: 2.72, 95% CI: 1.24, 5.96) were found to be significantly associated with early sexual debut. More than one fourth of students practiced early sexual debut. The finding suggests the need of strengthening prevention strategies, effective intervention, and programs in educational institutions to reduce early sexual debut and its consequences. Furthermore, special attention should be given to female students and students who watch pornography.

## Introduction

Early sexual debut is defined as having sexual intercourse before the age of 18 years.<sup>1</sup> Many students belonging to the age group of youths where important life events and health damaging behaviours started.<sup>2-4</sup> Youths usually engage with early sexual debut to experiment sex before marriage.<sup>1,5</sup> Early sexual activity

within a passionate relationship could increase expectations of early marriage and childbearing with its several potential impacts on reproductive life.<sup>2,6,7</sup>

Evidence indicated that those students who engaged early sexual debut are exposed to risky sexual behaviours such as unprotected sexual intercourse, multiple sexual partners and incorrect or inconsistent condom use leading to HIV/AIDS, sexually transmitted infection (STIs), unwanted pregnancies, unsafe abortion, early childbirth, and psychosocial problems.<sup>8-13</sup> In particular, female youths are prone to pregnancy and childbirth related complications (like fistula, or even death) that aggravated by physiological immaturity to practice sexual intercourse and give birth.<sup>10,12,14</sup>

Early age at sexual intercourse make female students prone to unwanted pregnancies that lead unsafe abortions.<sup>15,16</sup> According to World Health Organization (WHO) report, about 16 million adolescents who experienced their first sexual intercourse ended up with unplanned pregnancies.<sup>13</sup> In Africa, unwanted pregnancy is the major sexual and reproductive health challenge that leads unsafe abortions with a high proportion of such practices observed among adolescents and young women.<sup>17</sup> In Sub Saharan Africa (SSA), the proportion of adolescent pregnancy that end up with abortion is highest.<sup>13</sup> In Ethiopia, 54% of women under the age of 15 years have had unwanted pregnancies.<sup>18</sup>

Early sexual debut increases young peoples' risk for infection with HIV and other STIs.<sup>19,20</sup> Each year, a high number of adolescents is infected with HIV globally.<sup>21</sup> In Ethiopia, the prevalence of at least one STI among HIV-infected adolescents was found to be 13.5%.<sup>22</sup> Additionally, early age at sexual intercourse is a predictor of future poor sexual health, early marriage, sexual abuse and violence.<sup>23-25</sup>

In SSA, up to 25% of adolescents have ever had sexual intercourse before the age of 15 years.<sup>26</sup> In Ethiopia, 62% women have an early sexual debut; and 58% marry before the age of 18, which can increase the vulnerability of early sexual debut.<sup>1</sup>

Factors associated with early sexual debut that have been identified so far were student's age, sex, residence, parental monitoring, behavioural factors, peer pressure, having more advanced

### Significance for public health

*Early sexual debut is associated with risky sexual behaviours such as unprotected sexual intercourse, multiple sexual partners and incorrect or inconsistent condom use leading to HIV/AIDS, sexually transmitted infection (STIs), unwanted pregnancies, unsafe abortion, early childbirth, and psychosocial problems. The pooled prevalence of early sexual debut among students in Ethiopia was 27.53% which implies the need of educational institutions based public health interventions. Among many factors, female gender, watching pornography and having boyfriend/girlfriend were identified as factors significantly associated with early sexual debut. Determination of the magnitude of early sexual debut among students and the identification of its associated factors is very important for public health interventions. The findings of this meta-analysis will help to design appropriate interventions and policies that target early sexual debut in educational institutions with collaborative effort of policy makers, stakeholders and other concerned institutions.*

physical maturity, attitudes towards sex, delinquency, school problems, depressive symptoms, pornographic materials, Khat and alcohol use.<sup>6,27-32</sup>

For the effective intervention of early sexual debut and its adverse effects, determination of its magnitude and identifications of associated factors is important. However, there was no a nationwide study assessing the pooled prevalence of early sexual debut among students in Ethiopia. Therefore, this systematic review and meta-analysis aims to estimate the pooled prevalence and the factors associated to early sexual debut among students in Ethiopia. The findings of this meta-analysis will help policy makers, stakeholders and other concerned institutions to plan and fight against early sexual debut among students. Furthermore, it will help to design appropriate interventions and policies that target early sexual debut in educational institutions.

## Methods

### Search strategies

Extensive search of articles was performed according to the guideline of reporting systematic review and meta-analysis (PRISMA) (Supplementary). Databases such as PubMed, Global Health, HINARI, Google advance search, Scopus, and EMBASE were accessed for published studies from March 10<sup>th</sup> to April 3<sup>rd</sup>. Unpublished studies have been also retrieved from Google, Google Scholar, universities' online libraries, and government organization's websites. Furthermore, for partial articles or those missing necessary information, the authors of the articles were contacted via e-mail. The search was done by the following keywords "Prevalence" OR "Epidemiology" OR "magnitude" AND "early sexual debut" OR "early sexual initiation" AND "associated factors" OR "determinants" OR "predictors" AND "student" AND "Ethiopia". The search was conducted using these terms with the options 'MeSH terms' and 'all fields' selected and including 'AND' and 'OR' Boolean operators as appropriate.

### Eligibility criteria

Initially, articles were screened using their titles and abstracts before retrieving the full-text papers. The retrieved full-text articles were further screened according to pre-specified criteria.

### Inclusion criteria

*Study area:* Only studies conducted in Ethiopia were included.

*Publication condition:* Both published and unpublished articles were considered.

*Study design:* All observational study designs (i.e., cross-sectional, case-control and cohort) reporting the prevalence of early sexual debut among students in Ethiopia were eligible for this meta-analysis.

*Language:* Both published and unpublished studies in the English language were included.

*Population:* Articles focusing on primary, preparatory and high school as well as college and university students were considered.

### Exclusion criteria

After having attempted to contact the primary author, studies that did not have a full text or abstract were excluded. Articles that did not clearly report the prevalence of early sexual debut among students in Ethiopia were excluded. In addition, studies focusing on only either males or females were excluded. Moreover, editori-

als, letters, reviews, commentaries and interventional studies were also excluded.

### Data extraction

The data was extracted from identified studies using a standardized data extraction form, which was adapted from the Joanna Briggs Institute (JBI). The extracted data included primary author, publication year, regions of the country where the study was conducted, study area, type of educational institutions, sample size, study design, response rate, prevalence and risk factors with 95% confidence intervals.

### Outcome measurements

The primary outcome variable of this study is early sexual debut, which defined as having sexual intercourse before the age of 18 years. The second outcome of this study was to identify factors associated with early sexual debut among students which was measured in the form of the odds ratio (OR). For each factor, the OR was calculated based on the binary outcome data reported by each study. The criterion for selecting variables included in the meta-analysis was how clearly and frequently they were reported in the individual studies. The factors included in this meta-analysis were: gender (male *versus* female), have boyfriend or girlfriend (Yes *versus* No) and watching pornography (Yes *versus* No).

### Quality assessment

The quality of the included studies was evaluated using the Newcastle-Ottawa Scale tool adapted for cross-sectional study quality assessments.<sup>33</sup> The articles were tested based on sample size and representativeness, comparability between participants, ascertainment of early sexual debut and statistical quality. Each individual paper was graded with a score that ranged from zero to ten. If the score of a paper was  $\geq 5$  out of 8, it was categorized as good quality, if the score fulfilled 50% of quality assessment criteria, it was considered medium quality, and for score  $\leq 3$ , it was defined as poor quality. Studies with quality assessment score medium and good were included in the final review.

### Data synthesis and analysis

After extracting and documenting in a Microsoft Excel spreadsheet, the data was exported to STATA ver. 11 for further analysis. The overall pooled prevalence of early sexual debut among students was estimated using a random-effects meta-analysis. Point prevalence, as well as 95% confidence intervals, was presented in a forest plot format. Heterogeneity between studies was assessed by computing p-values for chi-square test, Q-statistics, and I<sup>2</sup> test.<sup>34</sup> Since, heterogeneity was exhibited among the included studies, random effect model was used during analysis. Publication bias was also examined by a funnel plot and Egger's regression test,<sup>35</sup> and the result indicated there was no publication bias. The association between early sexual debut and associated factors was determined by log odds ratio.

## Results

### Search results

A total of 2,563 articles were generated from different databases, of which 1821 were duplicates. From the remaining 742 articles, 694 articles were excluded after review of their titles and abstracts. Thus, 48 articles were assessed for eligibility based on the pre-set criteria, further yielding exclusion of 39 articles due to

not reported the outcome of interest, and variation in study population. Finally, the remaining 9 articles were used to determine the pooled prevalence of early sexual debut in Ethiopia (Figure 1).

### Characteristics of included studies

In this meta-analysis, all the included articles reported prevalence of early sexual debut among students in Ethiopia. The sample size of studies ranged from a minimum of 273, a study conducted among Debre Markos University students<sup>36</sup> to a maximum of 723, a study done in Woldia town.<sup>37</sup> All studies included specified the study population, and used random sampling techniques to select each participant. Five studies used self-administered questionnaires adapted from previous studies, two from WHO self-administered questionnaires, and two studies do not explain where they adapt the questionnaires. The overall quality of included studies ranged from 4 to 8. Seven of the included studies had good quality and the remaining two had medium quality.

In this review, a total of 4,217 participants were involved from 4,342 identified students with a response rate of 97.12%. Of these 4,217 participants included in this review and meta-analysis, 2159 (51.2%) were males and 2058 (48.8%) were females. All 9 articles were cross-sectional studies in which one<sup>38</sup> of the included studies was unpublished. Regarding study area of the studies, four were from Amhara,<sup>36,37,39,40</sup> one from Oromia,<sup>41</sup> two from Tigray,<sup>42,43</sup> and Addis Ababa<sup>38,44</sup> (Table 1).

### Prevalence of early sexual debut in Ethiopia

The pooled prevalence of early sexual debut among students in Ethiopia was 27.53% (95% CI: 20.52, 34.54). Since, heterogeneity in the included studies was exhibited ( $I^2 = 96.6$ ,  $p < 0.001$ ), a random effect meta-analysis model was computed to estimate the pooled prevalence of early sexual debut among students in Ethiopia (Figure 2). There is no evidence of publication bias from the visual inspection of the funnel plot (Figure 3) and the Egger's test ( $p = 0.076$ ).

### Factors associated with early sexual debut

In this meta-analysis, those factors reported in more than two primary studies were included. Five primary studies indicated that female gender was strongly associated with early sexual debut. The finding showed that females are more likely to engage early sexual debut than males, with odds ratio of 3.64 (95% CI: 1.67, 5.61) (Figure 4). Four studies reported that early sexual debut were almost four times more likely to occur among participants who viewed pornography (OR: 3.8: 95% CI: 2.10, 5.50) (Figure 5).

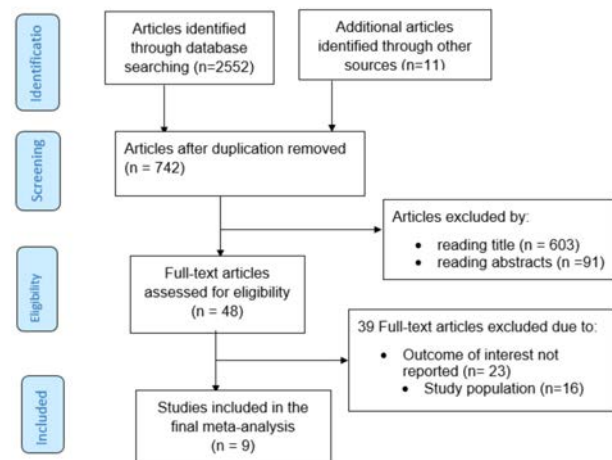


Figure 1. Flow chart of study selection for systematic review and meta-analysis of early sexual debut among students in Ethiopia, 2020.

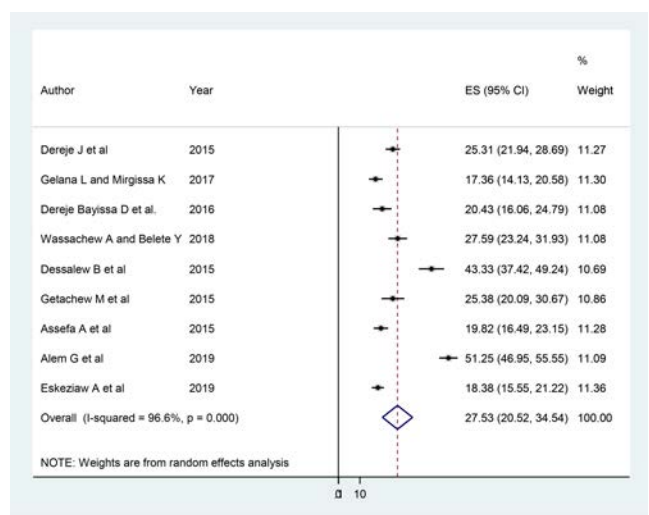


Figure 2. Forest plot of the pooled prevalence of early sexual debut among students in Ethiopia, 2020.

Table 1. Descriptive summary of primary studies included in the systematic review and meta-analysis of early sexual debut among students in Ethiopia, 2020.

First author	Publication year	Region	Study area	Study design	Sample size	Response rate (%)	Prevalence (%)
Dereje J et al, <sup>44</sup>	2015	Addis Ababa	Addis Ababa	Cross sectional	650	97.85	25.3
Gelana L and Mirgissa K <sup>38</sup>	2017	Addis Ababa	Addis Ababa	Cross sectional	548	96.7	17.4
Dereje Bayissa D et al., <sup>41</sup>	2016	Oromia	Ambo University	Cross sectional	373	87.9	20.4
Wassachew A and Belete Y <sup>40</sup>	2018	Amhara	Leghida, Amhara Region	Cross sectional	409	99	27.6
Dessalew B et al., <sup>39</sup>	2015	Amhara	FaggetaLekoma Awi Zone	Cross sectional	286	94.4	43.4
Getachew M et al., <sup>36</sup>	2015	Amhara	Debre Markos University	Cross sectional	273	95.24	25.4
Assefa A et al., <sup>42</sup>	2015	Tigray	Shire town	Cross sectional	561	98	19.8
Alem G et al. <sup>43</sup>	2019	Tigray	Aksum town	Cross sectional	519	100	51.3
Eskeziaw A <sup>37</sup>	2019	Amhara	Woldia town	Cross sectional	723	99.3	18.4

Furthermore, three studies documented that students who have boyfriend or girlfriend was 2.72 more likely to involve early sexual debut with the odds ratio of 2.72 (95% CI: 1.24, 5.96) (Figure 6).

### Discussion

The objectives of this systematic review and meta-analysis was to assess the prevalence and associated factors of early sexual debut among students in Ethiopia. Accordingly, the overall pooled prevalence of early sexual debut among students in Ethiopia was 27.53% (95% CI: 20.52, 34.54). Even if there was no analogous meta-analysis study conducted on this specific research question within the area, the prevalence reported in the present study is consistent with the survey carried out from eight African countries,<sup>45</sup> six Caribbean countries<sup>46</sup> and twenty-five schools in eastern Scotland, United Kingdom,<sup>47</sup> which showed the occurrence of

early sexual debut among students as 27.3%, 26.9% and 28% respectively. This finding implies the need of students' awareness of to protect themselves from early and risky sexual practice. In addition, to address the needs of adolescents national sexual health policy-makers should take such considerable evidence.<sup>48</sup> Moreover, even though the Ethiopia Health policy gives due attention for youths' health, this study indicates the needs of evaluating its effectiveness and strengthening of interventions. The prevalence of early sexual debut among students was lower than other studies conducted from five SSA countries which found the prevalence of early sexual debut as high as 43.5%.<sup>49</sup> This result also lower than the survey carried out in South Africa which reported 50% of males and 47% of females had early sexual debut.<sup>6</sup> The reason for this variation could be due to differences in the study population or in the tools used by individual studies conducted in each country. Moreover, it might due to the differences in health policy of the respective countries, accessibility of information on reproductive health issues, and the cultures of study participants.

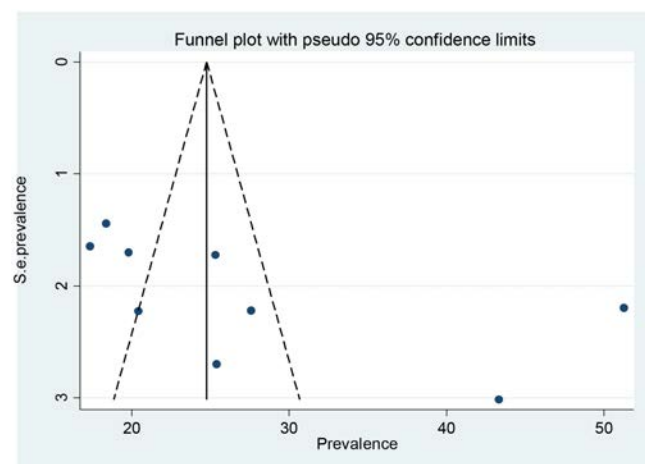


Figure 3. Funnel plot with pseudo 95% confidence interval that investigated the publication bias of the pooled prevalence of early sexual debut, Ethiopia, 2020

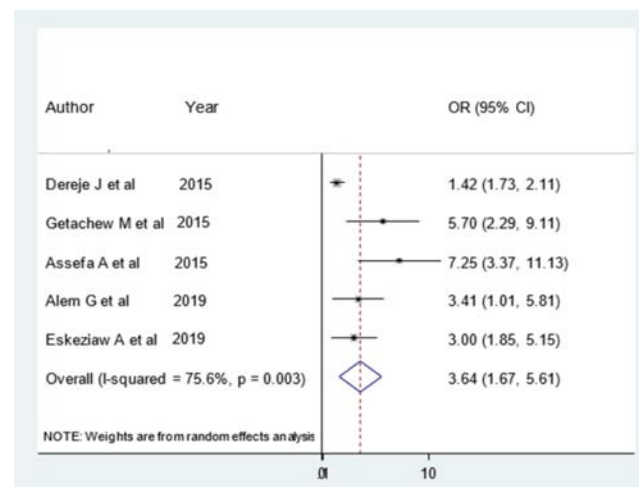


Figure 4. Forest plot showing the pooled odds ratio of the association between gender and early sexual debut in Ethiopia, 2020.

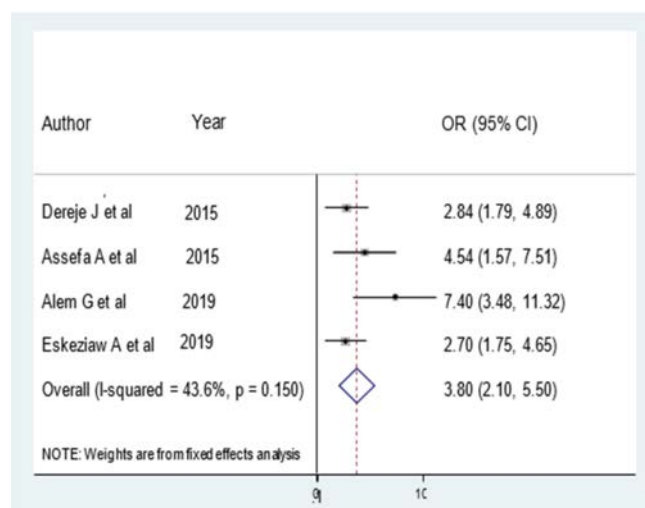


Figure 5. Forest plot showing the pooled odds ratio of the association between watching pornography and early sexual debut in Ethiopia, 2020.

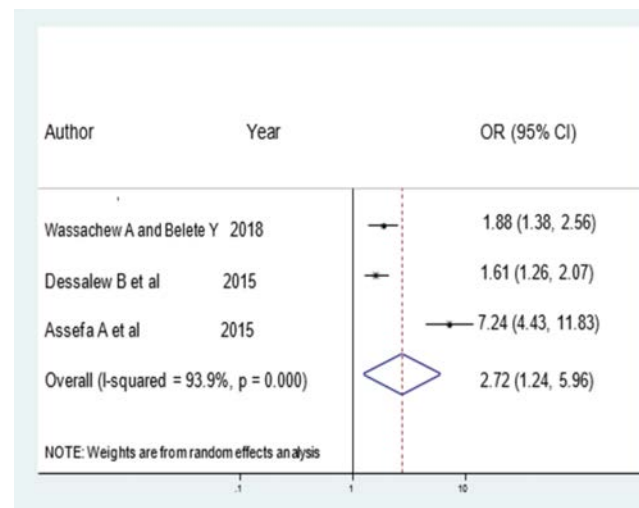


Figure 6. Forest plot showing the pooled odds ratio of the association between having boyfriend/girlfriend and early sexual debut in Ethiopia, 2020.

In current meta-analysis, being female, view pornography and having a boyfriend or girlfriend were found to be determinants of early sexual debut. Accordingly, in this study, female students were 3.64 times more likely to have early sexual debut than males. This finding is supported by other studies conducted in 2016 EDHS,<sup>1</sup> Nigeria,<sup>29</sup> and Nairobi.<sup>30</sup> The reason could be due to lots of pressure from families and cultural influence that forces females to marry at young age. In addition, young women are more likely physically forced to have sex by their first partner than young men.<sup>6</sup> Moreover, female students could receive more attention from older men, but they have poor perceived self-confidence to refuse sexual intercourse.<sup>50</sup> In addition, students who were exposed to pornographic materials were 3.8 times more likely to initiate sexual activity before the age of 18 years. This study is in line with a study done at Alamata, Northern Ethiopia<sup>28</sup> and Bahir Dar University.<sup>51</sup> The reason could be due to youths may develop motivation to experiment sex after watching pornography that can stimulate psychological and mental sexual desire. Moreover, erotic sexual stimulation or early sexual practice could be roused due to the impulsive nature of pornographic materials.<sup>52,53</sup>

Students who had a boyfriend/girlfriend were 2.72 times more likely to start early sexual intercourse compared to their counterparts. This finding is in line with a study carried out among adolescents in Burkina Faso.<sup>54</sup> This could be due to the fact that pressure from their boyfriend/girlfriend could influence individuals to have sexual practice, even without their will. Evidence also revealed that youths having boyfriend/girlfriend are more likely to initiate sexual practice for the reason not to lose their relationship.<sup>55</sup>

This meta-analysis considered articles have available full-text versions and conducted only in the English language. All of the studies included in this review were cross-sectional, and so causality cannot be established. Even though, there was high heterogeneity between studies, subgroup analysis was not done. Moreover, this meta-analysis represented only studies reported from four regions which may affect the pooled prevalence of early sexual debut, and yield an under-representation.

## Conclusions

This meta-analysis found that more than one fourth of students practiced early sexual debut. Female gender, watching pornography and having a boyfriend/girlfriend were identified factors for early sexual debut. The finding of this study suggests the need of strengthening prevention strategies, effective intervention, and programs to reduce early sexual debut in educational institutions with a collaboration effort of government policy makers, non-governmental organizations, program designers and other stakeholders. Particular attention should be given to female gender, watching pornography and having a boyfriend/girlfriend to reduce sexual and reproductive health consequences resulted from early sexual debut. This study also suggests the needs of women empowerment against pressure from their cultural influence that forces females to marry at young age.

## Abbreviations

AOR: Adjusted odd ratio;  
 CI: Confidence intervals;  
 OR: Odds ratio;  
 SSA: Sab Saharan Africa

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**Availability of data and materials:** All data generated or analyzed during this study are included in this published article.

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