adolescents

Article

Effect of Exposure to Boarding Schooling on Pregnancy among School-Going Teenagers: A Retrospective Case-Control Study in Eastern Province, Zambia

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Abstract: Cases of teenage pregnancy remain high in Eastern Province of Zambia—contributing to health, economic, and social problems. This study sought to determine the effect of exposure to boarding schooling on pregnancy among school-going teenagers, taking into account individual and school characteristics. This was a retrospective case-control study involving 261 cases and 522 controls obtained from nine boarding and nine day secondary schools, between 2019 and 2021. STATA 16.1 MP was used for all statistical analyses at a 5% level of significance. Unadjusted and adjusted effects were obtained using logistic regression analysis—taking into account 18 school clusters. Cases had a mean age of 17.4 years (±1.14 years), controls were 16.1 years (±1.71 years) old on average, and 315 (40%) of the participants were exposed to boarding schooling. The unadjusted odds of pregnancy in the exposed and unexposed (day scholars) girls were 0.25 and 0.73, respectively (cOR = 0.34, CI: 0.24–0.48, $p < 0.0001$). Adjusting for other characteristics, teenage girls in boarding schools had 60% lower odds of pregnancy (aOR = 0.40, CI = 0.16–1.00, $p = 0.049$). In light of this evidence, enrollment of teenage girls in boarding schools is encouraged to help mitigate teen pregnancy in the province. Additionally, a multicenter prospective study is recommended.

Keywords: pregnancy; boarding schooling; effect; teenager; exposure

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1. Introduction

The teenage years are a period of transition from childhood to adulthood through which teenagers experience physical, emotional, and sexual maturity [1]—which in most cases is associated with high-risk sexual behavior resulting in unintended pregnancy. Teenage pregnancy (TP) continues to pose major public health concerns on a global scale [2,3]. Although it is a global problem, TP is more likely to occur in marginalized communities, commonly driven by poverty and lack of opportunities, which is characteristic of developing countries [4]. Therefore, developing countries such as Zambia disproportionately bear a high burden of TP—resulting in increased maternal mortality, morbidity, and chronic health complications [5,6]. In developing regions, the teenage birth rate is four times higher than in high-income regions and more common in Latin America and the Caribbean, South Asia, and sub-Saharan Africa than anywhere else in the world [7]. According to the World Health Organization, as of 2019, an estimated 21 million pregnancies occurred in teenagers aged 15–19 years in developing countries each year, of which about 50 percent were unintended—resulting in an estimated 12 million births [4]. In Zambia, a recent survey showed that about 29 percent of teenagers in the country had begun childbearing, and five percent were pregnant with their first child—childbearing was reportedly higher in rural areas (37%) than in urban areas (19%) across the country [8].

Across Zambia's 10 provinces, Eastern Province has the third highest prevalence (40%) of TP in the country. The percentage of teenagers who have begun childbearing in Zambia is highest in Southern (43%), Western (41%), Eastern (40%), Northwestern (36%), and Central (31%) provinces [8]. Determinants of TP are complex and often intertwined, among which are poor social and economic support, lack of education, lack of access to appropriate sexual and reproductive health services, gender inequality, child marriage, peer pressure, inadequate sexual knowledge, and risk perceptions [1,9–11]. Lack of power to negotiate safer sex options, ambivalence towards sex, and weak implementation of the Penal Code Act (which criminalizes sexual intercourse with girls below 16 years) have also been associated with TP [1,9,10]. The resulting TP presents negative economic, psychosocial, and health consequences for the victims and their families [8,9,11]. Teenage mothers face higher risks of obstructed labor, eclampsia, obstetric fistula, puerperal endometritis, sexually transmitted infections, and systemic infections, while their babies face higher risks of low birth weight, intrauterine growth retardation, preterm birth, and severe neonatal conditions [4,5,7]. TP's risks have been associated with high maternal and neonatal morbidity and mortality [4,12].

To mitigate TP in the country, the government of Zambia with the support of other stakeholders embarked on various interventions. They introduced sexual and reproductive health education in schools; initiated the stop child marriages campaign—especially in rural areas; ensured the availability of infrastructure and human resources for girls to attend school; and introduced adolescent sexual and reproductive health services and youth-friendly corners in strategic health facilities to enhance the utilization of family planning services among teenagers [13]. Despite these efforts, it is not uncommon for school-going girls to fall pregnant and drop out of school in Zambia. A large number of girls in primary and secondary school become pregnant and drop out of school each year—more so in rural areas of the country such as Eastern province [8,14]. Although most cases of TP occur among school-going teenagers, it is unclear whether the occurrence of TP cases could vary between teenage girls exposed to boarding schooling and those exposed to daytime secondary schooling.

Existing evidence suggests that keeping girls in secondary schools and higher education institutions could help countries reduce the risk of TP [1,9,15,16]. In Eastern and Southern African countries, having girls stay in school, particularly secondary school, had a preventive effect on the possibility of experiencing TP [17,18]. In addition to keeping girls in school, health education in senior high school could significantly improve sexual behaviors, abstinence, and knowledge of pregnancy prevention [5,10,18]. The positive effect of keeping girls in school on lowering chances of TP has also been echoed in Zambia, where selected studies have revealed that TP is common among girls who happen to not be in school—and the majority of school dropouts due to pregnancy reportedly occur in lower secondary grades [1,19,20]. However, there remains a huge gap in knowledge regarding the effect of exposure to boarding schooling on teenage pregnancy due to limited research on the subject.

The aim of the study was therefore to further the understanding of the dynamics of TP—by specifically determining the effect of boarding schooling on TP in Eastern Province of Zambia. It was hypothesized that exposure to boarding schooling relative to day secondary schooling would reduce the odds and consequently the probability of TP in the province. Study findings could help in establishing targeted interventions through the provision of research-based evidence on the mode of schooling associated with lower chances of TP.

2. Materials and Methods

2.1. Study Design

This was a retrospective case-control study based on the analysis of school records involving 783 teenage girls—261 cases and 522 controls—obtained from 18 schools, nine boarding and nine-day secondary schools. The study extracted data from records between 1 January 2019 and 31 December 2021 using a checklist. Given that limited information

existed on whether boarding schooling affected teenage pregnancy, a retrospective case-control study provided precedence for studies of higher strength.

2.2. Study Setting

The study was conducted in girls-only and co-education boarding and day secondary schools in Eastern Province—one of Zambia's 10 provinces. The province is generally rural, with agriculture as the main economic activity, and borders with Malawi to the east and Mozambique to the south. The province has 16 districts and one of the highest population densities in the country [8]. It had about 140 secondary schools—16 of which were boarding schools—with four girls-only schools, two boys-only schools, and 10 co–education schools, spread out over 10 districts [21]. Eastern Province ranked third in the prevalence of teenage pregnancy in the country [8], making it suitable for the study.

2.3. Eligibility Criteria

A case was defined as a teenage girl (13–19 years), in grades 8–12 who fell pregnant whilst in school between 1 January 2019 and 31 December 2021—whose incident of pregnancy was captured by the respective school. A control was defined as a teenage girl (13–19 years) in grades 8–12 who never fell pregnant between 1 January 2019 and 31 December 2021 in the same schools where cases were obtained—whose records were captured by the respective school. All records with a large ($\geq$50%) amount of missing information were excluded from the study.

2.4. Study Variables

The outcome variable in this study is teenage pregnancy—a binary variable with levels: yes (1) for a case or no (0) for a control. Boarding schooling is the primary exposure variable—a binary variable with levels: exposed (1) for a teenage girl in a boarding school or unexposed (0) for a teenage girl in a day secondary school. Individual and school characteristics that are potential confounders include age, grade, location, school population, school fees, school management, type of school, availability of a trained guidance and counseling teacher, availability of religious activities, and frequency of reproductive health education.

2.5. Sampling

A rotary method without replacement was used to select nine boarding secondary schools out of 14 possible boarding schools in the province. Similarly, nine day secondary schools were selected from a possible 124 secondary schools—each from the respective districts where boarding schools were obtained. A complete enumeration of 261 recorded incidents of pregnancy from all the 18 sampled schools made up the cases. Survivor sampling (obtaining controls from the same population where cases were obtained) was employed to select a random sample of 522 controls from a sampling frame of all possible controls in the 18 sampled schools. Controls were matched to cases by year of incident and the school enrolled in. The sampling frame for controls was made such that the number of controls obtained from each school was proportional to the number of cases obtained from respective schools. To improve on statistical power, a one case to two controls ratio was adopted in the study [22].

2.6. Ethical Considerations

The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the University of Zambia Biomedical Research Ethics Committee (UNZABREC REF. No. 2096-2021). Further, clearance to proceed with the study was obtained from the National Health Research Authority (Ref No: NHRA0000011/25/11/2021). Additionally, heads of respective schools provided consent to have individual schools participate in the study.

2.7. Statistical Analysis

Data were analyzed using STATA version 16.1 MP [23]. The distribution of age—a continuous variable—was assessed graphically and satisfied the normality assumption; hence, the mean and standard deviation were reported. Consequently, an unpaired samples T-test was used to test for the mean age difference between cases and controls. Contingency tables were used to compare the distribution of categorical variables between cases and controls, with the Pearson chi-square test used to test for independence. The odds of teenage pregnancy, *p*-values, and associated 95% confidence intervals (CIs) were estimated by comparing the odds of exposure in cases to those in controls using unadjusted and adjusted binomial logistic regression analysis. The modeling process took into account the 18 school clusters involved in the study. An investigator-led backward stepwise approach was adopted in model estimation, using exposure to boarding schooling as the primary explanatory variable. The likelihood ratio test, AIC, and BIC statistics were used to pick between competing models. Pairwise correlation analysis was used in eliminating explanatory variables exhibiting strong ($r \geq |0.8|$) correlation [24]. Model diagnostics on the best-fit model showed a sensitivity of 36 percent, specificity of 90 percent, correct classification of 73.2 percent, and an area under the curve of 77.1 percent (results not presented). A complete case analysis was adopted in the analysis process. All statistical analyses were done at a 5% level of significance.

3. Results

3.1. Comparison of Baseline Characteristics between Cases and Controls

Table 1 compares the distribution of individual and school characteristics between cases and controls. Participants were on average 16.5 years (±1.67 years) old. Cases had a mean age of 17.4 years (±1.14 years), and controls were aged 16.1 years (±1.71 years) on average. This difference in mean age was significant ($p < 0.0001$). Over a third, 312 (39.9%), of the participants were in junior secondary (grades 8–9), while most, 471 (60.2%), were in senior secondary (grades 10–12). There was sufficient evidence indicating that the proportion of cases and controls was different between junior and senior secondary grades ($p < 0.0001$). Three-hundred fifteen (40%) of the participants were exposed to boarding schooling, whereas 468 (60%) were in day secondary schools. Similarly, the differences in the distribution of cases and controls by exposure were not by random chance ($p < 0.0001$).

Table 1. Comparison of baseline characteristics between cases and controls ($n = 783$).

Characteristic	Overall *n* (%)	Cases, *n* = 261 *n* (%)	Controls, *n* = 522 *n* (%)	*p*-Value
Age in years				
Mean (±SD)	16.5 (±1.67)	17.4 (±1.14)	16.1 (±1.71)	**<0.0001** [T]
Grade				
Junior Secondary	312 (39.9)	81 (31.0)	231 (44.3)	**<0.0001** [C]
Senior Secondary	471 (60.2)	180 (69.0)	291 (55.7)	
Exposure				
Boarding	315 (40.2)	63 (24.1)	252 (48.3)	**<0.0001** [C]
Day Secondary	468 (59.8)	198 (75.9)	270 (51.7)	
Location				
Rural	304 (38.8)	93 (35.6)	211 (40.4)	0.195 [C]
Urban	479 (61.2)	168 (64.4)	311 (59.6)	
Three-year average population				
≤500 pupils	231 (29.5)	48 (18.4)	183 (35.1)	**<0.0001** [C]
>500 pupils	552 (70.5)	213 (81.6)	339 (64.9)	

Table 1. *Cont.*

Characteristic	Overall *n* (%)	Cases, *n* = 261 *n* (%)	Controls, *n* = 522 *n* (%)	*p*-Value
Annual school fees				
≤K1000 ($60)	432 (55.2)	192 (73.6)	240 (46.0)	**<0.0001** [C]
>K1000 ($60)	351 (44.8)	69 (26.4)	282 (54.0)	
School management				
Government	643 (82.1)	234 (89.7)	409 (78.4)	**<0.0001** [C]
Mission	140 (17.9)	27 (10.3)	113 (21.7)	
Type of school				
Combined	587 (75.0)	376 (72.0)	211 (80.8)	**0.007** [C]
Girls only	196 (25.0)	146 (28.0)	50 (19.2)	
Trained guidance/counseling teacher				
Yes	262 (33.5)	83 (31.8)	179 (34.3)	0.486 [C]
No	521 (66.5)	178 (68.2)	343 (65.7)	
Availability of religious activity				
Yes	737 (94.1)	244 (93.5)	493 (94.4)	0.591 [C]
No	46 (5.9)	17 (6.5)	29 (5.6)	
Frequency of RHE				
Rare	130 (16.6)	39 (14.9)	91 (17.4)	**0.001** [C]
Regular	624 (79.7)	221 (84.7)	403 (77.2)	
None	29 (3.7)	1 (0.4)	28 (5.4)	

[C] = *Chi-squared test*, [T] = *Unpaired/Independent samples T-test*, ***RHE*** = *Reproductive Health Education*. The *p*-values in bold signify statistical significance.

The results in Table 1 further show that most—479 (61.2%)—schools were in an urban locality, and the majority—552 (70%)—had a three-year average population of over 500 pupils. Under half, 351 (44.8%), of the participants paid at least K1000 (about $60) in school fees. The majority, 643 (82.1%), schools were government-run, and three quarters, 587 (75%), were co-education schools. Many schools, 521 (66.5%), lacked a trained guidance and counseling teacher. Reproductive health education was provided regularly in most—624 (79.7%)—schools but rarely in others—130 (16.6%). Average pupil population, school fees, school management, type of school, and frequency of reproductive health education all showed evidence of an association with teen pregnancy (*p*-values < 0.005).

3.2. Odds of Pregnancy Adjusted for the Exposure

Table 2 shows that the odds of pregnancy among the exposed (those in boarding school) and unexposed (day scholars) were 0.25 and 0.73, respectively. The odds of being a case among the exposed were 0.34 times that among the unexposed group, and this was significantly different from one (cOR = 0.34, CI = 0.24–0.48, $p < 0.0001$).

Table 2. Odds of pregnancy among the exposed and unexposed teenagers (*n* = 783).

Exposure	Cases *n* = 261	Controls *n* = 522	Odds of Pregnancy	Odds Ratio cOR (95% CI)	*p*-Value
Boarding Secondary	63	252	0.25	0.34 (0.24–0.48)	**<0.0001**
Day Secondary	198	270	0.73		

CI = *Confidence interval*, ***cOR*** = *Crude Odds Ratio.* The *p*-values in bold signify statistical significance.

3.3. Effect of Boarding Schooling on Teen Pregnancy Adjusted for Other Characteristics

Table 3 shows adjusted and unadjusted binomial logistic regression estimates of the effect of exposure to boarding schooling on teenage pregnancy using 756 complete records. Results show that taking into account individual and school characteristics, pupils exposed to boarding schools compared to those in day secondary schools (unexposed) had 0.40 times lower odds of pregnancy, and this reduction in odds could range from a factor of 0.16–1.0 in the source population at a 95% confidence level (aOR = 0.40, CI = 0.16–1.00, $p = 0.049$). The *p*-value (0.049) provides evidence that this effect was not by random chance. Additionally, there was strong evidence suggesting that a year increase in age significantly

increased the odds of pregnancy by 95%, keeping other variables in the model constant (aOR = 1.95, CI = 1.58–2.52, $p < 0.0001$). Similarly, pupils in populated (>500 pupils) schools relative to those in less populated schools ($\leq$ 500 pupils) had significantly higher (4 times) odds of pregnancy (aOR = 3.88, CI = 1.69–8.87, $p = 0.001$). On the other hand, being in a senior versus junior secondary grade (aOR = 0.60, CI = 0.33–1.10, $p = 0.097$) and being in a girls-only versus a co-education school (aOR = 0.68, CI = 0.12–3.97, $p = 0.670$) reduced the odds of teenage pregnancy. However, there was less evidence suggesting that these effects could not result from random chance.

Table 3. Odds of pregnancy among teenagers exposed to boarding schooling adjusted for individual and school characteristics ($n = 756$).

Variables	Adjusted Estimates			Unadjusted Estimates		
	aOR	CI (95%)	*p*-Value	cOR	CI (95%)	*p*-Value
Exposure						
Day Secondary	Ref			Ref		
Boarding school	0.40	0.16–1.00	**0.049**	0.34	0.15–0.76	**0.008**
Age in years	1.95	1.58–2.42	**<0.0001**	1.81	1.48–2.20	**<0.0001**
Education level						
Junior secondary (8–9)	Ref			Ref		
Senior secondary (10–12)	0.60	0.33–1.10	0.097	1.76	0.92–3.38	0.087
Three-year average population						
≤500 pupils	Ref			Ref		
>500 pupils	3.88	1.69–8.87	**0.001**	2.40	1.67–3.44	**<0.0001**
School management						
Missionary	Ref			Ref		
Government	0.54	0.10–3.02	0.486	2.39	1.09–5.28	**0.030**
Type of school						
Co-education	Ref			Ref		
Girls only	0.68	0.12–3.97	0.670	0.61	0.19–1.98	0.410

aOR = *Adjusted Odds Ratio*, ***cOR*** = *Crude Odds Ratio*, ***CI*** = *Confidence Interval*. The *p*-values in bold signify statistical significance.

Unadjusted analysis estimates shown in Table 3 indicate that the effect of boarding schooling on teen pregnancy is that teens who were exposed to boarding schooling had 66% reduced odds of pregnancy (OR = 0.34, CI = 0.24–0.47, $p = 0.008$) compared to their unexposed counterparts in day secondary schools, and this effect was unlikely to result by chance alone. The reduction in odds could range from a minimum of 24% to a maximum of 85% in the target population, with a 0.95 probability. Similarly, teenagers in girls-only schools compared to those in co-education schools had 39% reduced odds of pregnancy (OR = 0.61, CI = 0.19–1.98, $p = 0.410$); however, this effect was not real. There was sufficient evidence indicating that a year increase in the age of pupils was significantly associated with a 1.81 times increase in the odds of teen pregnancy (OR = 1.81, CI = 1.48–2.20, $p < 0.0001$).

3.4. Adjusted Probability Predictions of Pregnancy for Boarding and Day Secondary Scholars

Results in Figure 1 summarize the probability predictions of teen pregnancy adjusted for all other variables in the model in Table 3. The figure focuses on the primary exposure at varying ages (A), stratified by type of school (B)—keeping all other variables in the model at their means. Figure 1A shows that overall, increasing age significantly increased the probability of teenage pregnancy for boarding and day scholars. However, the probability of falling pregnant was lower for teenage girls exposed to boarding schooling than those unexposed. This held for all teen ages (13–19 years), with sufficient evidence suggesting that the differences in probabilities were not due to random chance ($p = 0.044$). Further, stratifying by type of school, the probability of pregnancy was lowest for teenagers exposed to girls-only boarding schools compared to co-education boarding schools and highest for teenagers exposed to co-education day secondary schools compared to those in girls-only day secondary schools (Figure 1B).

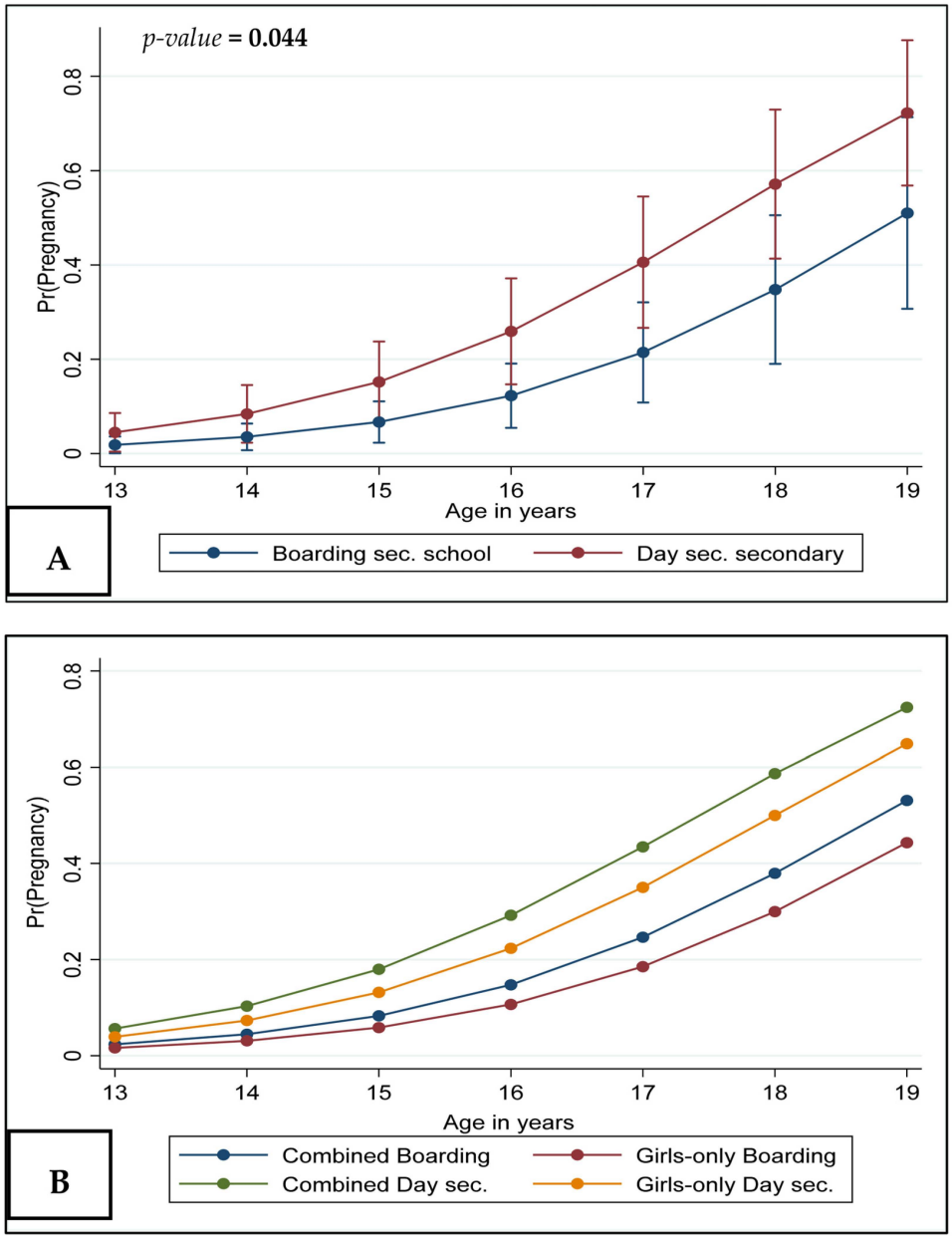

Figure 1. Adjusted probability predictions of teen pregnancy among the exposed and unexposed girls at varying ages (**A**)—stratified by type of school (**B**).

4. Discussion

This study sought to determine the effect of exposure to boarding schooling on teenage pregnancy. At all levels of analysis, results provide evidence that exposure to boarding schooling could have a protective effect against pregnancy among school-going teenage girls. In the study, the distribution of cases and controls was found to significantly differ between the exposed and unexposed groups, with exposure to boarding schooling having the lowest proportion (24%) of cases compared to exposure to day secondary schooling (76%). Consequently, the odds of being a case among the exposed (0.25) were lower relative to the unexposed group (0.73). The reducing effect of the exposure was further echoed at unadjusted and adjusted logistic regression analysis, where exposed teenage girls had 66 percent and 60 percent reduced odds of pregnancy, respectively, compared to their unexposed counterparts (Table 3). Given that limited published studies have investigated a direct relationship between boarding schooling and pregnancy, these findings can only

be compared to studies that associated keeping girls in school with decreased pregnancy risk [1,15].

Further analysis showed that, although the probability of teen pregnancy increased with age for both exposed and unexposed pupils, the risk was significantly lower in the exposed group (Figure 1). This provides more evidence that exposure to boarding schooling could be associated with fewer cases of teenage pregnancy among schooling girls. These results are comparable to findings by [25,26], who revealed that having girls in school reduced the chances of pregnancy. However, this is a cautious comparison given that these studies never considered a particular mode of schooling but rather looked at being in school generally. The significant reduction in odds and probability of pregnancy in pupils exposed to boarding schools could be thought to arise from a more restrictive and controlled environment characteristic of many boarding schools in the country. Such an environment restricts pupil–pupil and pupil–external environment interaction, hence minimizing the risk of indulging in sexual activities and consequently teen pregnancy. This kind of environment is a direct contrast to that provided by day secondary schools. This aligns with the UNAIDS report that staying in school longer has a protective benefit in reducing the risk of pregnancy—as it is associated with increased control over sexual and reproductive health and rights [18]. However, some cross-sectional surveys conducted on teenage pregnancy during the COVID-19 pandemic reported contrasting findings to the current study [27,28]. These discrepancies could be attributed to varying study designs, settings, and study periods.

Additionally, the study showed that the odds of being a case significantly increased with age at both unadjusted and adjusted analyses (Table 3). The increasing effect of age on pregnancy has also been echoed in many other studies on the subject [12,26,29]. This effect could indicate that risky sexual indulgence tends to be more common with an increase in teen age. On the other hand, sexual intercourse debut is probably delayed until later teenage stages, hence pregnancy being more common in older teenage [8,30]. Similarly, a fourfold increase in odds of teen pregnancy was noted for pupils in populated (>500 pupils) schools compared to less populated schools. A plausible explanation for this finding is that most pupils in populated schools—which are usually low-cost schools—are likely to come from economically challenged backgrounds. This could force them into engaging in transactional sexual affairs resulting in pregnancy. This thought is in line with other studies that have shown that low socio-economic status, which forces girls into transactional sexual activities, significantly increases the chances of pregnancy among teenage girls [19,31–34]. On the other hand, less populated schools, which mostly tend to be high-cost schools, could be cushioned from the negative effect of low socioeconomic status on teenage pregnancy and may also benefit from effective supervision as a result of a low teacher-learner ratio. This could account for the low rates of teenage pregnancy observed in such schools. However, substantive literature to support this is very limited.

Other notable results in the study showed that school management was associated with teenage pregnancy at unadjusted analysis—with teenage girls in government-run schools having over two times higher odds of pregnancy compared to those in mission-run schools (Table 3). This can be attributed to different policies adopted towards teenage pregnancy by mission and government-run schools, in that while government-run schools adopt a re-entry policy—allowing pupils who fall pregnant to re-enroll after delivery [35,36]—many mission schools adopt stringent policies that involve expulsion and forced transfers concerning in-school pregnancy [37]. This could therefore deter pupils in mission-run schools from engaging in high-risk sexual behaviors compared to those in government-run schools. Additionally, the majority of mission-run schools in the study were boarding schools, whereas most government-run schools were day secondary schools—therefore, girls in mission schools could have benefited from a restrictive environment associated with boarding schools. It is also noteworthy that all mission-run schools in the study were high-cost schools, which presents the possibility that most girls in mission-run schools were from economically stable backgrounds—a protective characteristic against teenage

pregnancy [31,34]. However, the effect of school management on pregnancy could not be substantiated at adjusted analysis.

Based on adjusted analysis, study findings suggest that a more restrictive learning environment associated with boarding schools protects school-going teenage girls from pregnancy. This, therefore, implies that having more girls enrolled in boarding schooling could mitigate cases of teenage pregnancy in this population. It is also important for boarding schools to continue providing a restrictive learning environment that limits male–female pupil and pupil–external environment interactions. To further mitigate teenage pregnancy, the government should consider enacting deliberate policies that make boarding schools more affordable for many families to afford sending their teenage girls to these schools. Additionally, findings suggest that interventions targeting older teenage girls and populated schools could help in reducing cases of pregnancy among school-going teenagers.

This study is not without limitations. Firstly, given the study design—case control—the study could not estimate the prevalence or incidence of teenage pregnancy among girls in secondary schools in the province. Secondly, since the study used secondary data (i.e., only cases recorded), it could not account for teenagers who had induced abortions or those who quit school without anyone's knowledge of their pregnancy state. Therefore, the number of cases used may have been an underestimation of the actual cases that occurred in the sampled schools. Lastly, due to the paucity of research focusing on the mode of schooling and teenage pregnancy, appropriate reference studies proved to be a huge limitation. Despite all these, the study recruited a sample large enough to demonstrate the effect of exposure to boarding schooling on pregnancy among school-going teenagers. Additionally, the study provided a new dimension to teenage pregnancy, which sets precedence for further research.

5. Conclusions

Considering individual and school characteristics, across 18 school clusters, the study provides evidence that exposure to boarding schooling had a protective effect against pregnancy among school-going teenage girls in Eastern Province—with exposed girls less likely to fall pregnant whilst in school relative to those unexposed (in day secondary school). Therefore, enrollment of teenage girls into boarding schools should be encouraged to help mitigate pregnancy among school-going teenagers. Additionally, future studies may build on the present findings and investigate whether prospective longitudinal effects of exposure to boarding schooling on teenage pregnancy exist.

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Informed Consent Statement: Informed consent was obtained from all school headteachers for every school involved in the study. Participants' consent was waived because the study was based on historical records, hence individual participants could not be traced.

Data Availability Statement: The data used and presented in this study are available on reasonable request from the corresponding author. The data are not publicly available due to the National Health Research Authority's legal and ethical restrictions.

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