


BMJ Open Disparities in intimate partner violence among women at the intersection of disability and HIV status in South Africa: a cross-sectional study

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ABSTRACT

Objective Previous research suggests a significant relationship between intimate partner violence (IPV) and HIV infection in women and that the risk of IPV is heightened in women with disabilities. Women with disabilities, particularly those residing in low-income and middle-income countries, may experience additional burdens that increase their vulnerability to IPV. We aimed to examine the association between having disability and HIV infection and the risk of IPV among women in South Africa.

Design Using the 2016 South Africa Demographic and Health Survey, we calculated the prevalence of IPV and conducted modified Poisson regressions to estimate the unadjusted and adjusted risk ratios of experiencing IPV by disability and HIV status.

Participants Our final analytical sample included 1269 ever-partnered women aged 18–49 years, who responded to the IPV module and received HIV testing.

Results The prevalence of IPV was twice as high in women with disabilities with HIV infection compared with women without disabilities without HIV infection (21.2% vs 50.1%). Our unadjusted regression analysis showed that compared with women without disabilities without HIV infection, women with disabilities with HIV infection had almost four times higher odds (OR 3.72, 95% CI 1.27 to 10.9, $p < 0.05$) of experiencing IPV. It appeared that women with disabilities with HIV infection experience compounded disparity. The association was compounded, with the OR for the combination of disability status and HIV status equal to or more than the sum of each of the individual ORs.

Conclusions Women with disabilities and HIV infection are at exceptionally high risk of IPV in South Africa. Given that HIV infection and disability magnify each other's risks for IPV, targeted interventions to prevent IPV and to address the complex and varied needs of doubly marginalised populations of women with disabilities with HIV infection are critical.

INTRODUCTION

Violence against women is a pervasive, global public health problem (WHO, 2013).¹ Estimates suggest that more than one-third of women aged 15 years and older have

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The outcome variables included exposure to intimate partner violence, including physical, sexual and emotional violence, and combinations of these.
- ⇒ Sociodemographic characteristics as covariates used in all our multivariate analyses were age (18–25 years, 25–34 years, 35+ years) education (no education, primary, secondary, higher), marital status (never married but partnered, currently or formerly married), number of dependent children (0, 1, 2, 3, 4 or more) and employment status (ie, employed or unemployed). Household characteristics included household wealth quintile (lowest, second, third, fourth, highest) and residence (ie, urban or rural).
- ⇒ The South Africa Demographic and Health Survey (SADHS) does not provide information about the duration, onset and cause of disability—all of which may potentially impact the data's accuracy.
- ⇒ The data were based on self-report and, thus, subject to potential recall and social desirability bias.
- ⇒ Because this is a cross-sectional study, a cause-and-effect relationship could not be determined.
- ⇒ The sample size was small and statistical power thus limited, especially as SADHS has a multistage sample and the design effect reduces statistical power for analyses.
- ⇒ SADHS data used were nationally representative of South African women 18–49 years of age with a final analytical sample of 1269 ever-partnered women.

experienced intimate partner violence (IPV) including physical violence, sexual violence or sexual coercion, threats of violence, psychological aggression or emotional abuse by a current or former partner in their lifetimes.² While both men and women can perpetrate or suffer IPV, the burden and the consequences of IPV disproportionately affect women.³

The relationship between IPV and HIV among women has been a topic of intense

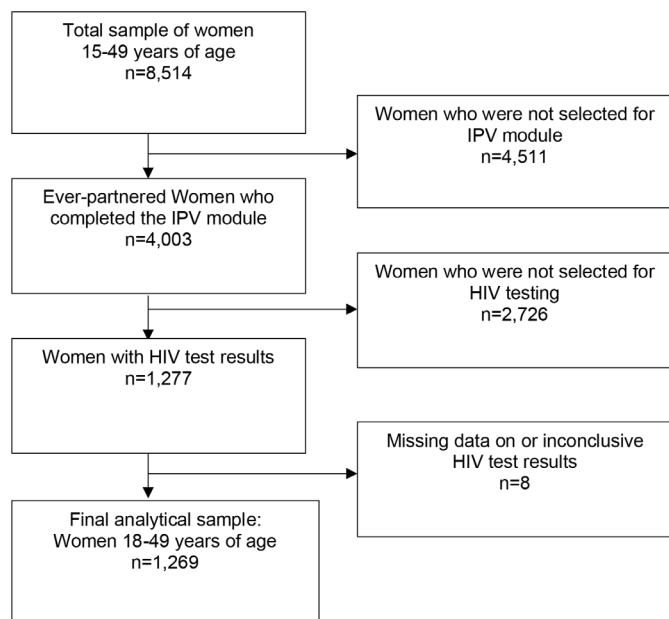


Figure 1 Analytical sample selection, South Africa Demographic and Health Survey (SADHS) 2016.²¹ IPV, intimate partner violence.

research for three decades, with evidence suggesting a significant association between the two.⁴⁻⁶ A review of 28 studies, a majority of which were conducted in low-income and middle-income countries, found a significant association between IPV and HIV infection in women.⁷ Similarly, data collected from 10 sub-Saharan African countries reported consistent and robust associations between HIV infection and risk of IPV in women.⁴ Longitudinal research in South Africa has shown that HIV incidence is significantly elevated by exposure to IPV and controlling partner behaviour.⁵ Further research has also shown that HIV incidence in women is elevated by exposure to rape⁸ and child abuse.⁹ Still, a majority of research to date has been conducted in high-income countries or among women considered to be at higher risk for HIV infection based on alcohol use or childhood exposure to sexual violence and trauma.⁷ Subgroup analyses in a 2014 systematic review and meta-analysis found a stronger association between IPV and HIV infection in low-income and middle-income countries than in high-income countries, suggesting not only the importance of contextual factors in understanding risk for HIV infection but also the need for research on the interface with diverse populations residing in varied social, economic and geographical settings.⁷

While less attention has been paid to the association between disability and IPV in low-income settings, research conducted in high-income countries suggests that disability is both a risk marker and a consequence of IPV.^{10 11} Evidence from the USA suggests that women with disabilities experience heightened risk for IPV given the passage of time.¹² Emerging research conducted from the Global South has suggested significant disparities in risk for IPV between reproductive-aged women with and

without disabilities.¹³⁻¹⁹ A recent pooled analyses of data from women participating in IPV prevention research in seven African and Asian nations found a doubling in risk for past year IPV experienced by women with disabilities compared with their non-disabled counterparts.²⁰

Despite the magnitude of violence experienced by both women with disabilities and women with HIV infection, the risk of IPV among women has not yet been examined at the intersection of disability and HIV infection. To address this gap, we conducted an exploratory data analysis of the nationally representative population-based 2016 South Africa Demographic and Health Survey (SADHS) to compare the prevalence of IPV among women with and without HIV infection in disabled and non-disabled groups.

METHODS

Data

We analysed data from the 2016 SADHS.²¹ The SADHS is supported by the US Agency for International Aid²² and provides up-to-date estimates of key demographic, socioeconomic and health indicators in South Africa, including sexual and reproductive health in adults, infant and maternal mortality, child mortality, nutritional status, malaria, disability status and biomarkers including HIV status. The SADHS employed a stratified two-stage sample survey design. In the first stage, primary sampling units (PSUs) or enumeration areas in urban and rural areas were selected. In the second stage, a random sample of approximately 30 residential dwelling units from each PSU was selected for the survey. Detailed information about survey design is available in the SADHS final survey reports.²²

Sample

The SADHS data are nationally representative of women 15–49 years of age. A total of 8514 women were interviewed in 2016 (see figure 1). Of these, 4003 ever-partnered women 18–49 years of age were selected to complete the IPV module. Among these women, only 1277 agreed to provide a blood specimen for HIV testing. In this study, we excluded women who refused to have their blood tested for HIV (n=2726) or who had missing or inconclusive HIV test results (n=8). Our final analytical sample included 1269 ever-partnered women, aged 18–49 years, who responded to the IPV module, and received HIV testing.

MEASURES

Outcome variables

The outcome variables included exposure to IPV. Following prior studies,^{4 13} we measured IPV using standard DHS domestic violence module pertaining to physical, sexual and emotional violence, and combinations of these. Ever-partnered women aged 18 and older were asked if their current partner (among currently partnered

Table 1 Sample characteristics of ever-partnered women 18–49 years old by disability and HIV status, South Africa, N=1269 (weighted percentages, SADHS 2016)

	No disability, no HIV (-/-) (N=832)	No disability and HIV (-/+) (N=393)	With disability, no HIV (+/-) (N=26)	With disability and HIV (+/+) (N=18)	P value*
Age	Referent	Cohort 1	Cohort 2	Cohort 3	a,b
18–25	26.5	10.2	5.9	0.0	
25–34	34.5	47.4	24.2	52.3	
35+	39	42.4	69.9	47.7	
Age, mean (SD)	31.8 (9.0)	33.5 (7.4)	38.4 (8.0)	35.3 (6.7)	a,b,c
Educational level					a
No education	1.6	2.1	2.1	5.0	
Primary	9.2	15	8.8	17.5	
Secondary	74	76.6	87.2	77.5	
Higher	15.2	6.3	1.9	0.0	
Marital status					
Never married but partnered	42.2	44.9	31.4	45.0	
Currently/formerly married	57.8	55.1	68.6	55.0	
No of living children					a
None	17.1	12.6	3.7	9.4	
1	29.1	31.2	28.3	12.9	
2	25	26.2	8.2	18.8	
3	15.3	21.6	35.7	33.5	
4 and more	13.6	8.4	24.1	25.3	
Employed					b,c
No	60.9	60.3	32.2	85.3	
Yes	39.1	39.7	67.8	14.7	
Household wealth quintile					a,c
Lowest	19.9	21.6	19.3	45.8	
Second	21.5	26.8	7.8	24.8	
Third	21.2	29.2	26.4	19.9	
Fourth	18.5	12.5	27.6	6.7	
Highest	18.9	10.0	18.9	2.8	
Place of residence					
Urban	69.2	69.5	68.1	48.4	
Rural	30.8	30.5	31.9	51.6	

Notes: a—indicates a statistically significant difference at $p < 0.05$ between women without disabilities with no HIV (-/-) and women without disabilities with HIV (-/+) (cohort 1), b—indicates a statistically significant difference at $p < 0.05$ between women without disabilities with no HIV (-/-) and women with disabilities with no HIV (+/-) (cohort 2) and c—indicates a statistically significant difference at $p < 0.05$ between women without disabilities with no HIV (-/-) and women with disabilities with HIV (+/+) (cohort 3). Source: South Africa Demographic and Health Surveys, 2016.²¹

*p values for differences, χ^2 test or t-test.

SADHS, South Africa Demographic and Health Survey.

women) or the most recent partner (among formerly partnered women) did the following to them in the past 12 months:

Physical violence: push you, shake you or throw something at you; kick you, drag you or beat you up; try to choke you or burn you on purpose; or threaten or attack you with a knife, gun or any other weapon.

Sexual violence: physically force you to have sexual intercourse with him even when you did not want to, physically force you to perform any other sexual acts you did not want to, or force you with threats or in any other way to perform sexual acts you did not want to.

Emotional violence: say or do something to humiliate you in front of others, threaten to hurt or harm you or

Table 2 Weighted prevalence rates (with 95% CIs) for past year intimate partner violence (IPV) among women 18–49 years, by disability and HIV status, South Africa, N=1269

IPV	Weighted %, (95% CI)	No disability & HIV (-/-) (N=832)			Disability & HIV (+/+)(N=18)			P value*	
		Referent	Cohort 1	Cohort 2	Cohort 3	Cohort 3			
	21.3	17.9 to 25.2	29.1	21.5 to 38.0	29.2	13.8 to 51.3	51.6	28.1 to 74.4	c

Notes: a—indicates a statistically significant difference at $p < 0.05$ between women without disabilities with no HIV (-/-) and women with disabilities with HIV (-/+) (cohort 1), b—indicates a statistically significant difference at $p < 0.05$ between women without disabilities with no HIV (-/-) and women with disabilities with no HIV (+/-) (cohort 2), and c—indicates a statistically significant difference at $p < 0.05$ between women without disabilities with no HIV (-/-) and women with disabilities with HIV (+/+) (cohort 3). Source: South Africa Demographic and Health Surveys, 2016.²¹

*p values for differences, χ^2 test or t-test.
SADHS, South Africa Demographic and Health Survey.

someone close to you, or insult you or make you feel bad about yourself.

We categorised women as having experienced IPV in the past 12 months if they answered yes to any of the questions relating to physical, sexual or emotional violence. Women who answered no to all questions about physical, sexual or emotional violence were categorised as not having experienced IPV in the past 12 months. We measured IPV as a binary variable (yes/no).^{4 13}

Exposure

Disability and HIV were considered as risk factors. Similar to earlier studies,¹³ disability status is measured as a binary indicator (ie, yes or no). We categorised women as having a disability if they reported ‘a lot of difficulty’ or ‘cannot function at all’ to any of the Washington Group Short Set of Questions on Disability²³ functional areas related to (1) seeing, (2) hearing, (3) communicating, (4) remembering, (5) walking and (6) washing or dressing.

Exposure to HIV was measured as a binary variable indicating HIV infection (yes/no). Blood spot samples were collected from women age 15–49 who agreed to provide their blood for HIV testing. We created a new variable combining disability and HIV status. This variable included the following women cohorts: women without disabilities who are HIV-positive (cohort 1) women with disabilities who are HIV-negative (cohort 2), women with disabilities who are HIV-positive (cohort 3) and women without disabilities who are HIV-negative (reference group). Of note, although HIV is a chronic disease and a potentially disabling condition it not considered to be a disability in this study.

Covariates

We included the following sociodemographic characteristics as covariates in all our multivariate analyses: age (< 25 years, 25–34 years, 35+ years) education (no education, primary, secondary, higher), marital status (never married but partnered, currently or formerly married), number of dependent children (0, 1, 2, 3, 4 or more) and employment status (ie, employed or unemployed). Household characteristics included household wealth quintile (lowest, second, third, fourth, highest) and residence (ie, urban or rural).

Statistical analysis

All analyses were weighted to account for complex survey design. Selected demographic and socioeconomic characteristics of women without disabilities who are HIV-positive (cohort 1), women with disabilities who are HIV-negative (cohort 2), women with disabilities who are HIV-positive (cohort 3), compared with women without disabilities who are HIV-negative (reference group) using the χ^2 test for categorical and t-test for continuous variables.

The IPV indicator was analysed as binary (yes/no) variables, coded such that higher prevalence indicated greater risk of experiencing IPV. We calculated the

Table 3 Unadjusted and adjusted odds ratios (with 95% CIs) for risk of past year intimate partner violence (IPV) among women 18–49 years by disability and HIV status, South Africa, N=1269

IPV	No disability, no HIV (-/-) (N=832)	No disability & HIV (-/+) (N=393)		Disability, no HIV (+/-) (N=26)		Disability & HIV (+/+) (N=18)	
	Referent group	Cohort 1		Cohort 2		Cohort 3	
Unadjusted: OR, (95% CI)	1.00	1.51	0.95 to 2.41	1.52	0.57 to 4.03	3.94**	1.42 to 10.93
Adjusted†: OR, (95% CI)	1.00	1.31	0.82 to 2.09	1.60	0.58 to 4.45	3.00*	1.09 to 8.24

Source: South Africa Demographic and Health Surveys, 2016.²¹

*p<0.05, **p<0.01, ***p<0.001.

†Adjusted for age, education, marital status, number of living children, employment status, household wealth and place of residence.

prevalence rates of IPV with respective 95% CI for the study cohorts and compared them to the study reference group using the χ^2 test. We also conducted logistic regressions to estimate the unadjusted and adjusted odds ratios (with 95% CIs) for IPV by disability and HIV status, with non-disabled HIV-negative women as the reference group. Multivariate models adjusted for the covariates described above. We used Stata (StataCorp) V.15 for all analyses, applying the *svy* commands to account for the complex sampling design of the SADHS, and a p<0.05 was the accepted level of significance.

Patient and public involvement

Given that this article was based on a retrospective analysis of secondary data from SADHS, no patients or subjects were directly involved in this study. However, two of our coauthors are from South Africa, including RJ from the South Africa Medical Research Council and MB from the National Treasury of South Africa. We plan to widely disseminate the paper's findings to members of the public in South Africa and globally via the author's institutions' respective communication and social media platforms (eg, Twitter, Facebook, LinkedIn, ResearchGate, Academia).

RESULTS

Table 1 presents the demographic and socioeconomic characteristics of women by disability and HIV status. Out of 1269 women in our study sample, 832 had no disability and were HIV-negative (referent group); 393 had no disability and were HIV-positive (cohort 1); 26 had a disability and were HIV-negative (cohort 2) and 18 had a disability and were HIV-positive (cohort 3).

Compared with women reporting no disability who were HIV-negative (referent group), non-disabled women with HIV infection (cohort 1) were, on average, more likely to be older, less educated, have more children and more likely to be poor. Women reporting a disability who were without HIV infection (cohort 2) were more likely to be older and more likely to be employed than the referent group. Women reporting a disability who were HIV-positive (cohort 3) compared with the referent group were more likely to be older, less likely to be unemployed and poor.

In both HIV and non-HIV groups, women with disabilities were more likely to be older than their counterparts without disabilities. Compared with women without disabilities in non-HIV group, women with disabilities also had significantly more children. We did not find significant differences for all other remaining characteristics.

Table 2 presents the prevalence rates for past year IPV among ever-partnered women age 18–49 by disability and HIV status. When comparing all cohorts to non-disabled women without HIV infection (referent), although the prevalence of past year IPV was slightly higher for non-disabled women with HIV infection (cohort 1) (21.3 vs 29.1, n.s.) and disabled women without HIV infection (cohort 2) (21.3 vs 29.2, n.s.), these differences were not statistically significant. The prevalence of past year IPV in disabled women with HIV infection (cohort 3) was more than twofold higher (21.3 vs 51.6, p<0.05) and it was statistically significant.

Table 3 presents the unadjusted and adjusted ORs for risk of past year IPV among ever-partnered women age 18–49 by disability and HIV status. Despite higher ORs, results from our unadjusted and adjusted regression analyses showed that the risk of past year IPV between non-disabled women without HIV infection (referent) and our first two cohorts-non-disabled women with HIV infection (cohort 1) and disabled women without HIV infection (cohort 2) did not reach statistically significant levels. However, the risk of past year IPV was high and statistically significant among women in our last cohort, disabled women with HIV infection (cohort 3), when compared with non-disabled women without HIV infection (referent). Results from our unadjusted regression analysis showed that compared with non-disabled women without HIV infection (referent), disabled women with HIV infection (cohort 3) had almost four times higher odds (OR 3.94, 95% CI 1.42 to 10.9, p<0.01) of experiencing IPV. Even after adjusting for women's sociodemographic characteristics, disabled women with HIV infection (cohort 3) still had three times higher odds (OR 3.00, 95% CI 1.09 to 8.24, p<0.05) of experiencing past year IPV compared non-disabled women without HIV infection (referent).



DISCUSSION

To our knowledge, this is the first study examining the risk of past year IPV experienced by women with disabilities by HIV status in a representative cross-section of South African women. Our findings provide evidence that, in respect of disability and HIV, the vulnerabilities associated with heightened risk for IPV may be compounded. In our adjusted analyses the ORs for IPV in disabled women with HIV infection compared with non-disabled women without HIV infection were more than threefold higher. Among disabled women, having HIV infection compounded the disparities: with the ORs for the combination of disability status and HIV status equal to, or more than, the sum of each of the individual ORs. While risk of IPV is known to be higher among disabled women^{13 20} and among women with HIV infection,^{4 7} ours is the first study to show compounded disparities for women living at the intersection of disability and HIV infection. This finding provides empirical evidence for Crenshaw's intersectionality theory,^{24 25} in that, women are often disadvantaged by multiple sources of marginalisation, including, their gender identity, disability status and other identity markers that do not exist independently from each other and that each interacts with the other leading to a complex convergence of marginalisation. Findings from our study suggest that marginalisation of South African women stemming from their disability status and HIV positive status is likely to result in compounded risk for IPV, that is, greater than the risk of disability status or HIV positive status alone.

The sample of women with disabilities, but not HIV, compared with those without disabilities was very small. Although they reported a higher prevalence of IPV, the unadjusted and adjusted OR of IPV risk were not statistically significant. This is likely to have been explained by the very small sample.

Consistent with previous research in low-income and middle-income countries,^{4 7 26–30} our findings showed a significantly higher prevalence of IPV among women with HIV infection without disability. However, we did not find a statistically significant increase in reports of IPV in unadjusted and adjusted regression analysis. Previous South African research has generally found a statistically significant increased risk,⁵ however, this has been for the relationship between ever experience of more than one act of physical and/or sexual IPV and HIV serostatus. Much of the past year IPV reported by the women was emotional abuse and exposure to this has not been shown to have as strong an association with HIV status as physical and sexual IPV.³¹ We also note that the population in this study was older than in other South African studies and IPV incidence declines with age,² as well as age possibly impacting disclosure of IPV experience due to different personal and systems-level factors, which might explain the lack of statistically significant difference.

This study contributes to an emerging body of research examining IPV at the intersection of disability and HIV among women in low-income and middle-income

countries using nationally representative data. Further research, including longitudinal studies with a robust sample size is needed to examine the causal pathways or mechanisms behind the observed compounding associations between disability and HIV infection on risk of IPV.

Our findings emphasise the need for increased attention to policy and practice efforts to prevent IPV among disabled women with HIV infection. And that disability status is an important consideration in designing and implementing violence and HIV prevention and intervention services.

LIMITATIONS

There are several limitations to this study that are worth noting. First, the SADHS does not provide information about the duration, onset, and cause of disability—all of which may potentially impact the data's accuracy. Second, the data were based on self-report and, thus, subject to potential recall and social desirability bias. Third, because this is a cross-sectional study, a cause and effect relationship could not be determined. Fourthly, the sizes of the study cohorts were unequal and rather small for the two study cohorts (N=26 for cohort 2 and N=18 for cohort 3, respectively), which can limit the statistical power and increase type I error rates.³² However, unequally sized cohorts are common in social science and maybe the result of survey's multistage random sampling design and the retrospective nature of creation of the study cohorts. Results from our post hoc power analysis showed that statistical power reached ~28% for cohort 2 and ~86% for cohort 1 when compared with the reference group (N=832). Finally, because not all women age 18 and older were selected for HIV testing and received the IPV module,²² the generalisability of the prevalence estimates is therefore unclear, and these results should be interpreted with caution.

Despite these limitations, this study is the first exploratory investigation of IPV at the intersection of disability and HIV among women in South Africa. The findings are highly relevant to researchers, policy-makers and non-governmental organisations working across various sectors to prevent IPV and address the needs and rights of women with disabilities, women with HIV infection, and the most vulnerable group of disabled women with HIV infection. Additional longitudinal studies, with larger and equally sized samples, are needed to replicate our exploratory study and examine whether having a disability and having HIV positive status have a compounding effect on the risk of IPV. Future research should also include qualitative data from women with both disability and HIV to better understand risks and needs of these doubly marginalised, reproductive age women.

CONCLUSIONS

Disabled women with HIV infection experience exceptionally high risk of IPV in South Africa. Given that disability

and HIV status magnify each other's risks for IPV, targeted interventions to prevent IPV and to address the complex and varied needs of doubly marginalised populations of disabled women with HIV infection is critical.

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Contributors IA conceptualised and designed the study; conducted a formal analysis of the data and interpretation of the findings, and wrote the first draft of the manuscript; IA also serves as the guarantor and accepts full responsibility for the work and/or the conduct of the study, had access to the data, and controlled the decision to publish; HZ accessed and verified the underlying data, participated in the concept and design; analysis, and interpretation of data; and drafted or revised the manuscript; AV, AN, RJ, MB and MM participated in the concept and design; interpretation of the findings and drafting or revising of the manuscript.

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Competing interests IA, HZ and AN report a grant from Cardno Emerging Markets, USA, during the conduct of the study; AV and RJ, MB and MM have no conflicts of interest to declare.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval Because data are deidentified and publicly available, the institutional review board approval is not required for this study.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available in a public, open access repository. Dataset available from National Department of Health (NDoH) SSASS, South African Medical Research Council (SAMRC), and ICF. South Africa Demographic and Health Survey 2016. 2019.

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