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Intersecting Epidemics: Intimate Partner Violence, Stress, and Diabetes Among South Asian Women in the United States

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Abstract

South Asian women in the United States face disproportionate health challenges, including higher rates of intimate partner violence as well as higher rates of Type 2 diabetes and gestational diabetes compared to other racial and ethnic groups. This cross-sectional study examines the association between intimate partner violence (psychological, physical, and sexual) and the diagnosis of gestational diabetes and type 2 diabetes. A web-based survey recruited 2,634 South Asian women in the U.S., collecting data on socio-demographics, intimate partner violence experiences, stress levels, and diabetes diagnosis. Logistic regression models adjusted for significant sociodemographic factors revealed that women with a history of intimate partner violence were 5.82 significantly more likely to report a type 2 diabetes diagnosis and 3.91 more likely to report a gestational diabetes diagnosis. Furthermore, stress as measured by the perceived stress scale, was also higher among women with intimate partner violence, potentially moderating the relationship between intimate partner violence and adverse health outcomes through cortisol dysregulation.

Despite high levels of educational attainment and employment, the prevalence of intimate partner violence was alarmingly high (66.7%), highlighting its pervasive impact on socioeconomic strata. These findings underscore the urgent need for culturally tailored interventions addressing intimate partner violence and its health consequences within South Asian communities. Further research is warranted to elucidate causal pathways and inform integrated public health strategies to mitigate disparities in chronic disease and intimate partner violence-related health outcomes.

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Background

There are over 5.4 million South Asian individuals currently living in the United States with ancestry in Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka [1,2]. Nearly half (46%) of those individuals identify as South Asian are women, representing a growing community with unique health needs [2]. Despite this growth, research on health issues affecting South Asian Americans remains limited. Additionally, this community continues to grow, yet

there is limited research on the health issues that impact this population [3]. Their lifetime health outcomes reflect how the U.S. is performing in their sustainable development goals and addressing issues of disparities across different ethnic groups. As the model minority myth continues to be a stereotype that persists for Asian Americans across the country, it is important to recognize differences in health outcomes and come to solutions to address them [4].

Intimate Partner Violence

Research indicates that two in five (40%) South Asian women in the U.S. experience physical and/or sexual intimate partner violence (IPV) during their lifetime [5]. Alarmingly, data collected during the COVID-19 pandemic suggests that rates of intimate partner violence in this population may have risen to nearly 50% [5]. These figures are significantly higher than intimate partner violence prevalence among other racial and ethnic groups [1,5]. Furthermore, evidence suggests that South Asian women living in the U.S. face a greater risk of intimate partner violence compared to their counterparts residing in South Asian countries [5]. However, the specific cultural, social, and systematic factors driving this disparity remain underexplored.

Although limited in scope, existing studies highlight the impacts of intimate partner violence on South Asian women. Intimate partner violence has been linked to chronic physical health conditions, including headaches, gastrointestinal issues, and back pain, as well as sexual and reproductive health complications, such as sexually transmitted infections (STIs), unplanned pregnancies, and abortion [6]. Among other populations, intimate partner violence has also been associated with severe health outcomes such as cardiovascular disease, thyroid disorders, and certain cancers [7]. It also has been explored that intimate partner violence is a precursor for both gestational diabetes and type 2 diabetes [7-9]. These associations emphasize the urgent need to understand the unique risk factors for intimate partner violence within the South Asian American community and to explore its comprehensive health implications.

Type II Diabetes and Gestational Diabetes

Not only are intimate partner violence rates higher among this population, but South Asian women living in the U.S. are also four to five times more likely to develop type 2 diabetes than non-Hispanic white women [3]. Previous studies have found that despite lower body mass index (BMI), South Asian adults continue to have a higher diabetes incidence than other ethnic groups [10-12]. This disparity in type 2 diabetes rates may be due to differences other than insulin resistance, such as insulin secretion or other unexplored factors [10]. South Asian women also have twice the risk of developing gestational diabetes, a precursor to type 2 diabetes, compared to non-Hispanic white women [11-12].

Multiple studies have found that experiencing intimate partner violence is associated with higher levels of circulating glucose, which typically precedes diabetes [3,7]. Previous research has not examined a potential link between intimate partner violence and the higher prevalence of type 2 diabetes among the South Asian population, though the relationship does exhibit biological plausibility as intimate partner violence-induced stress has been shown to dysregulate the hypothalamus-pituitary-adrenal-axis, which manages cortisol secretion [13]. The hypersecretion of cortisol subsequently leads to glucose intolerance, increasing the incidence of diabetes [13].

Stress

A bidirectional relationship exists between stress levels and gestational diabetes [14]. Anxiety during pregnancy has been shown to significantly increase the risk of gestational diabetes, while the diagnosis itself and the associated stress of disease management contribute to an elevated risk of adverse

maternal and infant health outcomes [13-14]. This dynamic underscores the compounded vulnerabilities faced by pregnant women exposed to chronic stressors.

One critical factor contributing to elevated stress levels is intimate partner violence, which is strongly associated with higher rates of anxiety and other mental health conditions [15]. Women who experience intimate partner violence may therefore be caught in a cycle of violence, stress, and adverse health outcomes, including gestational and type 2 diabetes. This cycle is biologically plausible, as intimate partner violence-induced stress has been shown to deregulate the hypothalamic-pituitary-adrenal axis, which manages cortisol secretion [13]. Chronic hypersecretion of cortisol resulting from this dysregulation can impair glucose metabolism, leading to insulin resistance and glucose intolerance – both precursors to diabetes [13].

Given the higher prevalence of both intimate partner violence and gestational and type 2 diabetes among South Asian women in the U.S., as well as the established link between intimate partner violence-induced stress and glucose intolerance, further research is critical to explore potential associations in this population. Such investigations could inform targeted intimate partner violence and diabetes prevention programs, addressing health disparities within this community. This cross-sectional study aims to examine the relationship between intimate partner violence and the diagnosis of gestational and/or type 2 diabetes among South Asian women in the U.S. We hypothesize that South Asian women who have experienced intimate partner violence in their lifetime are more likely to be diagnosed with gestational diabetes and/or type 2 diabetes compared to those without a history of type 2 diabetes.

Material and Methods

Study Design and Participants

This research was conducted utilizing a quantitative cross-sectional web-based survey sent out across the United States. As an incentive, participants were offered entry into a raffle for a chance to win a $50 Amazon gift card, which was funded by the George Washington University Center for Excellence in Maternal and Child Health. Eligibility criteria included individuals who were at or above the age of 18, currently living in the U.S., and identify as a female of South Asian descent. The survey was anonymous and completed by a total of 2,634 people.

This study was approved by the Institutional Review Board (IRB) at the George Washington University at the GW Office of Human Subjects Research and is registered under the IRB number NCR234807.

Data Collection

Data collection occurred in March 2023. The research team collaborated with over 100 organizations with diverse religious, cultural, and professional backgrounds across the country on platforms including email, listservs, and social media applications such as Twitter, Instagram, LinkedIn, and Facebook. These methods were used with the intention to recruit a diverse group of South Asian women who have a range of experiences that are being examined in this study.

Instrument and Measures

This present study was part of a larger study in which data was collected via a 52-item questionnaire conducted in English. Questions were adapted from the Centers for Disease Control and Prevention (CDC) National Health and Nutrition Examination survey (NHANES), Adverse Childhood Experiences (ACEs), the Natividad Diabetes Questionnaire and the Perceived Stress Scale [16-19].

This present study looked at the following domains: socio- demographics, health history, intimate partner violence, adverse childhood experiences, stress, gestational diabetes, and type 2 diabetes. It took participants approximately 15-20 minutes to complete the survey. Table 1 illustrates the diverse sociodemographic characteristics of the sample population.

While the questionnaire included these diverse topics of interest, the main variables of this hypothesis are type 2 diabetes diagnosis, gestational diabetes diagnosis, experience with intimate partner violence (including psychological, physical, and sexual intimate partner violence), and stress.

The variables of type 2 diabetes diagnosis and gestational diabetes diagnosis was assessed by asking participants a dichotomous question (yes or no) of if they have ever been diagnosed with the disease.

The questions to assess psychological intimate partner violence included, "*has a current or past partner ever: insulted you or made you feel bad about yourself, belittled or humiliated you in front of other people, done things to scare or intimidate you on purpose, or threatened to hurt you or someone you care about?". The questions to assess physical intimate partner violence included, "has a current or past partner ever: slapped you or thrown something at you that could hurt you, pushed you or shoved you or pulled your hair, hit you with his fist or something else that could hurt you, kicked you, dragged you, or beat you up, choked or burnt you on purpose, threatened to use or actually used a gun, knife, or other weapon against you?". Lastly, the questions to assess sexual intimate partner violence included, "has a current or past partner ever: physically forced you to have sexual intercourse when you did not want to, did you ever have sexual intercourse you did not want to because you were afraid of what your partner might do, forced you to do something sexual that you found degrading or humiliating?".* These are the standardized questions used by the World Health Organization to measure intimate partner violence. All of the intimate partner violence questions were recoded, so that if participants answered "yes" to one or more of the intimate partner violence related questions, they were coded as having "yes" for experiencing intimate partner violence in their lifetime. Only if they answered "no" to each of the intimate partner violence grouped questions were participants coded as "no" for experiencing intimate partner violence in their lifetime.

Stress was measured using the 10-item Perceived Stress Scale (PSS-10), a scale has been established as an acceptable psychometric [19]. The ten questions of the PSS-10 were re-coded into a single stress variable/scale, taking the average value for all questions of the PSS-10 that make up the construct of stress. Higher scores indicate higher than average stress levels compared to other members of society and are associated with adverse health effects (Cronbach's alpha = 0.586) [20].

Statistical Analysis

Quantitative data analysis was conducted using SPSS 28. Frequencies and percentages were calculated for all categorical variables. Analysis on differences between those with and without a type 2 diabetes diagnosis were explored using both chi-square and t-test bivariate analysis. Chi- square testing was utilized to compare type 2 diabetes diagnosis and lifetime intimate partner violence. T-testing was utilized to compare stress levels between those with and without type 2 diabetes, and those who have and have not experienced intimate partner violence. Multivariate logistic regression adjusting for significant sociodemographic characteristics was conducted to provide a more meaningful analysis of the data. Four multivariate models were run to assess the different forms of intimate partner violence (any intimate partner violence, psychological, physical, and sexual forms of intimate partner violence) for both type 2 diabetes and gestational diabetes.

Results

As shown in Table 1, the study population consisted of 2,634 individuals. The majority of the study sample was between the ages of 18-29 (50.2%). Participants represented a diverse range of South Asian countries, with the largest groups identifying as being from India (24.2%), Maldives (16.3%), and Bangladesh (16%). Nearly 11 % (10.7%) of participants reported being from two or more South Asian backgrounds.

Most participants achieved a form of higher education (60.1%), holding degrees beyond high school. Further, a significant proportion of participants were employed full-time (75.6%), while 21.1% reported working part-time. Only 3.3% of the population was not employed. The distribution of household income varied widely, with 30.1% of earning between $50,000-$74,999 annually, 27.1% earning $75,000-$99,000. Additionally, 21.9% had incomes between $25,000-$49,999, while 10.8% earned between $100,000-$199,999.

The majority of participants (82.5%) were born in the U.S., while 17.5% were foreign born. Over half the participants (56.3%) reported being married or in a domestic partnership.

Overall, the study sample represented a diverse and predominantly well-educated group of South Asian -background individuals, primarily in the younger age categories, with most participants being employed full-time and earning moderate to high incomes.

Table 1. Characteristics of the study population, N= 2,634

Characteristic	Total % (n)
Age	
18-29	1,323 (50.2%)
30-39	41.2% (1,084)
40-49	6.9% (181)
50+	1.7% (46)
South Asian Background	
Bangladesh	16% (418)
Bhutan	10.7% (281)
India	24.2% (634)
Maldives	16.3% (426)
Nepal	9.7% (253)
Pakistan	8.2% (215)
Sri Lanka	4.2% (110)
Two or more	10.7% (280)
Education	
Less than high school	3.4% (88)
High school diploma/GED	15.3% (401)
Higher education	60.1% (1,570)
Technical/trade school	21.2% (555)
Employment Status	
Full-time	75.6% (1,938)
Part-time	21.1% (542)
Not employed	3.3% (85)

Income	
Under $25,000	4.9% (127)
$25,000-$49,999	21.9% (570)
$50,000-$74,999	30.1% (784)
$75,000-$99,999	27.1% (704)
$100,000-$199,999	10.8% (280)
$200,000 plus	5.3% (137)
Born in U.S.	
Yes	82.5% (2,159)
No	17.5% (457)
Relationship Status	
Single	14.3% (373)
In a relationship/Dating	20.3% (531)
Married/Domestic Partnership	56.3% (1,470)
Widowed/Separated/Divorced	9.0% (236)
Pregnancy	
Yes	72.5% (1910)

Table 2 illustrates the prevalence of type 2 diabetes, gestational diabetes, and experiences of intimate partner violence within a lifetime among the study sample. Of the sample, 12% reported to have a type 2 diabetes diagnosis, and 18.3% of those who had been pregnant reported to have had a gestational diabetes diagnosis. For intimate partner violence, 66.7% reported experiencing psychological, physical, and/or sexual in their lifetime, 56.1% reported experiencing psychological intimate partner violence, 50.2% reported experiencing physical intimate partner violence, and 52.7% reported experiencing sexual intimate partner violence. On a scale of 1-5, the average stress level of the study sample was 2.925, with a standard deviation of 0.428, indicating a higher than average level of stress compared to other members of society.

Table 2. Diabetes, Intimate Partner Violence, and Stress Among Study Sample

Variable:	**% (n):**
Type II Diabetes Diagnosis	12.0% (315)
Gestational Diabetes Diagnosis	18.3% (481)
Lifetime Intimate Partner Violence	66.7% (1,757)
Psychological Intimate Partner Violence	56.1% (1,477)
Physical Intimate Partner Violence	50.2% (1,321)
Sexual Intimate Partner Violence	52.7% (1,389)
Stress Scale (α = 0.586)	**mean (SD):**
	2.925 (0.428)

Four logistic regression models were run to assess the unique effects of the different forms of intimate partner violence on type 2 diabetes diagnosis and gestational diabetes (GDM) diagnosis. Each of the sociodemographic characteristics were included in each of the regression models to assess the variation on the dependent variables.

Table 3 and 4 presents the adjusted odds ratio from four multivariate logistic models for (1) lifetime intimate partner violence; (2) psychological intimate partner violence; (3) physical intimate partner violence; and (4) sexual intimate partner violence, adjusting for stress and socio demographic variables as they were significant covariates in the bivariate analysis.

In Table 3, Model 1 found that participants who experienced intimate partner violence in one's lifetime (OR 5.818, 95% CI 3.540, 9.564) were significantly more likely to report having type 2 diabetes. Similarly, Model 2 found those participants who experienced psychological intimate partner violence (OR 3.295, 95% CI 2.320, 4.680) were significantly more likely to report having type 2 diabetes. Participants who reported physical intimate partner violence (as seen in Model 3), (OR 7.301, 95% CI 4.886, 10.909) were also significantly more likely to report having type 2 diabetes. Lastly, as seen in Model 4, participants who reported sexual intimate partner violence (OR 2.904, 95% CI 2.095, 4.025) were significantly more likely to report having type 2 diabetes.

Table 3. Multivariate logistic analysis for Type 2 Diabetes

	Adjusted odds ratio (95% CI)			
	Model 1 Any Lifetime I*PV	Model 2 Psycho-logical IPV	Model 3 Physical IPV	Model 4 Sexual IPV
Any lifetime IPV				
Yes	5.818 (3.540, 9.564) ***			
No	Ref			
Psychological IPV				
Yes		3.295 (2.320, 4.680) ** *		
No		Ref		
Physical IPV				
Yes			7.301 (4.886, 10.909) ***	
No			Ref	
Sexual IPV				
Yes				2.904 (2.095, 4.025) ***
No				Ref
Age				
18-29	Ref	Ref	Ref	Ref
30-39	0.969 (0.700, 1.341)	0.923 (0.667, 1.276)	0.925 (0.664, 1.286)	0.949 (0.689, 1.307)
40-49	1.048 (0.567, 1.937)	0.981 (0.533, 1.807)	1.092 (0.584, 2.043)	0.987 (0.536, 1.820)
50+	6.612 (2.376, 15.985) ***	4.836 (1.921, 12.173) ***	6.996 (2.685, 18.232) ***	4.976 (2.029, 12.203) ***

Income				
Less than $25,000	Ref	Ref	Ref	Ref
$25,000-$49,999	2.563 (0.990, 6.639)	2.438 (0.945, 6.292)	1.936 (0.749, 5.006)	2.683 (1.040, 6.925) *
$50,000-$74,999	3.142 (1.229, 8.031) *	2.999 (1.178, 7.635) *	2.372 (0.932, 6.039)	3.344 (1.314, 8.512) *
$75,000-$99,999	3.812 (1.463, 9.927) **	3.795 (1.464, 9.838) *	2.969 (1.144, 7.705) *	4.087 (1.576, 10.600) **
$100,000-$199,999	2.486 (0.887, 6.969)	2.298 (0.824, 6.413)	2.058 (0.734, 5.769)	2.641 (0.947, 7.362)
$200,000 plus	1.608 (0.469, 5.520)	1.427 (0.421, 4.837)	1.809 (0.520, 6.292)	1.905 (0.566, 6.414)
Education Level				
Less than high school	Ref	Ref	Ref	Ref
High school/GED	0.548 (0.245, 1.223)	0.535 (0.240, 1.195)	0.596 (0.263, 1.351)	0.536 (0.241, 1.193)
Trade school	0.567 (0.262, 1.229)	0.546 (0.252, 1.180)	0.580 (0.264, 1.275)	0.561 (0.259, 1.213)
Higher education	0.605 (0.286, 1.280)	0.577 (0.273, 1.217)	0.673 (0.313, 1.445)	0.638 (0.302, 1.351)
Born in the U.S.				
Yes	1.510 (0.994, 2.295)	1.431 (0.944, 2.168)	1.385 (0.907, 2.115	1.505 (0.997, 2.272)
No	Ref	Ref	Ref	Ref
Ethnicity	Ref	Ref	Ref	Ref
Bangladesh	1.046 (0.591, 1.850)	1.038 (0.589, 1.827)	0.951 (0.533, 1.698)	1.064 (0.608, 1.861)
Bhutan India	1.486 (0.929, 2.376)	1.460 (0.918, 2.323)	1.514 (0.939, 2.439)	1.492 (0.940, 2.370)
Maldives	1.273 (0.772, 2.099)	0.611 (0.312, 1.196)	0.561 (0.283, 1.112)	0.531 (0.272, 1.038)
Nepal	0.463 (0.205, 1.046)	0.482 (0.214, 1.084)	0.410 (0.180, 0.931) *	0.432 (0.192, 0.972) *
Pakistan Sri Lanka	0.741 (0.309, 1.776)	0.767 (0.321, 1.833)	0.737 (0.303, 1.792)	0.713 (0.299, 1.702)
More than one	0.602 (0.307, 1.182)	1.276 (0.779, 2.090)	1.196 (0.719, 1.990)	1.174 (0.717, 1.923)
	2.740 (1.658, 4.528) ***	2.663 (1.621, 4.374) ***	2.444 (1.465, 4.076) ***	2.502 (1.525, 4.105) ***
Relationship Status				
Single	Ref	Ref	Ref	Ref
Dating	1.484 (0.865, 2.547)	1.551 (0.903, 2.665)	1.489 (0.858, 2.581)	1.599 (0.935, 2.734)
Married	1.526 (0.914, 2.547)	1.597 (0.957, 2.665)	1.395 (0.827, 2.352)	1.582 (0.952, 2.629)
Separated	1.630 (0.854, 3.112)	1.608 (0.842, 3.071)	1.348 (0.699, 2.599)	1.737 (0.913, 3.308)
Employment Status				
Full-time	Ref	Ref	Ref	Ref
Part-time	1.517 (1.097, 2.097) *	1.492 (1.078, 2.064) *	1.430 (1.029, 1.989) *	1.459 (1.056. 2.015) *
Unemployed	2.012 (0.934, 4.333)	1.752 (0.819, 3.746)	2.236 (1.021, 4.897) *	1.967 (0.927, 4.172)

*p<0.05; **p<0.01; ***p<0.001

For Table 4 examining gestational diabetes, Model 1 found that those participants who experienced intimate partner violence in one's lifetime (OR 3.912, 95% CI 2.754, 5.555) were significantly more likely to report having gestational diabetes during a pregnancy. Similarly, Model 2 found those experiencing psychological intimate partner violence (OR 2.628, 95% CI 1.995, 3.460) were significantly more likely to report having type 2 diabetes. Participants who reported physical intimate partner violence (as seen in Model 3), (OR 2.950, 95% CI 2.259, 3.853) were also significantly more likely to report having type 2 diabetes. Lastly, as seen in Model 4 participants who reported sexual intimate partner violence (OR 3.028, 95% CI 2.309, 3.972) were significantly more likely to report having type 2 diabetes.

Table 4. Multivariate logistic analysis for GDM

	Adjusted odds ratio (95% CI)			
	Model 1 Any Lifetime IPV	Model 2 Psychological IPV	Model 3 Physical IPV	Model 4 Sexual IPV
Any lifetime IPV				
Yes	3.912 (2.754, 5.555)***			
No	Ref			
Psychological IPV				
Yes		2.628 (1.995, 3.460)***		
No		Ref		
Physical IPV				
Yes			2.950 (2.259, 3.853)***	
No			Ref	
Sexual IPV				
Yes				3.028 (2.309, 3.972)***
No				Ref
Age				
18-29	Ref	Ref	Ref	Ref
30-39	0.894 (0.684, 1.168)	0.859 (0.658, 1.122)	0.878 (0.672, 1.147)	0.922 (0.708, 1.202)
40-49	0.643 (0.386, 1.071)	0.605 (0.364, 1.005)	0.662 (0.398, 1.103)	0.672 (0.406, 1.112)
50+	0.223 (0.049, 1.008)	0.186 (0.041, 0.835)*	0.227 (0.051, 1.015)	0.181 (0.040, 0.820)*
Income				
Less than $25,000	Ref	Ref	Ref	Ref
$25,000-$49,999	1.626 (0.730, 3.626)	1.592 (0.712, 3.559)	1.439 (0.641, 3.232)	1.650 (0.740, 3.678)
$50,000-$74,999	2.387 (1.085, 5.250)*	2.316 (1.051, 5.105)*	2.040 (0.922, 4.513)	2.487 (1.132, 5.465)*
$75,000-$99,999	3.025 (1.352, 6.768)**	3.052 (1.362, 6.840)**	2.662 (1.184, 5.986)*	3.103 (1.388, 6.937)**
$100,000-$199,999	2.849 (1.213, 6.695)*	2.631 (1.120, 6.181)*	2.416 (1.023, 5.708)*	2.833 (1.210, 6.632)*
$200,000 plus	2.058 (0.740, 5.720)	1.840 (0.664, 5.099)	1.997 (0.715, 5.577)	2.340 (0.842, 6.501)
Education Level				

Less than high school	Ref	Ref	Ref	Ref
High school/GED	0.738 (0.363, 1.500)	0.732 (0.359, 1.491)	0.776 (0.381, 1.580)	0.689 (0.339, 1.403)
Trade school	0.949 (0.479, 1.894)	0.891 (0.447, 1.779)	0.937 (0.470, 1.870)*	0.939 (0.471, 1.874)
Higher education	0.697 (0.352, 1.380)	0.670 (0.338, 1.326)	0.733 (0.370, 1.452)*	0.728 (0.368, 1.441)
Born in the U.S.				
Yes	1.206 (0.849, 1.713)	1.098 (0.773, 1.560)	1.170 (0.823, 1.663)	1.178 (0.835, 1.661)
No	Ref	Ref	Ref	Ref
Ethnicity				
Bangladesh	Ref	Ref	Ref	Ref
Bhutan	1.595 (1.010, 2.520)*	1.583 (1.005, 2.493)*	1.461 (0.924, 2.310)	1.529 (0.971, 2.409)
India	1.113 (0.742, 1.671)	1.106 (0.740, 1.654)	1.094 (0.729, 1.640)	1.087 (0.726, 1.629)
Maldives	0.834 (0.504, 1.384)	0.837 (0.507, 1.382)	0.796 (0.480, 1.319)	0.813 (0.495, 1.335)
Nepal	1.163 (0.695, 1.947)	1.173 (0.704, 1.956)	1.046 (0.625, 1.751)	1.070 (0.640, 1.790)
Pakistan	0.957 (0.492, 1.862)	0.935 (0.483, 1.810)	0.862 (0.444, 1.675)	0.855 (0.442, 1.655)
Sri Lanka	1.426 (0.945, 2.150)	1.379 (0.918, 2.071)	1.298 (0.862, 1.956)	1.353 (0.900, 2.034)
More than one	2.035 (1.273, 3.254)**	2.016 (1.269, 3.204)**	1.929 (1.212, 3.070)**	1.861 (1.173, 2.951)**
Relationship Status				
Single	Ref	Ref	Ref	Ref
Dating	0.960 (0.550, 1.674)	0.948 (0.543, 1.655)	0.900 (0.514, 1.574)	0.999 (0.575, 1.734)
Married	0.806 (0.489, 1.329)	0.785 (0.476, 1.295)	0.753 (0.456, 1.244)	0.830 (0.505, 1.363)
Separated	0.848 (0.463, 1.551)	0.842 (0.461, 1.538)	0.803 (0.438, 1.471)	0.919 (0.505, 1.673)
Employment Status				
Full-time	Ref	Ref	Ref	Ref
Part-time	1.023 (0.761, 1.375)	1.012 (0.753, 1.360)	0.985 (0.732, 1.327)	0.973 (0.725, 1.307)
Unemployed	2.235 (0.971, 5.146)	2.074 (0.907, 4.745)	2.133 (0.930, 4.890)	2.163 (0.946, 4.946)
Stress	1.400 (1.018, 1.926)*	1.460 (1.065, 2.003)*	1.550 (1.128, 2.130)**	1.455 (1.063, 1.993)*

*p<0.05; **p<0.01; ***p<0.001

Discussion

This study examines the intersection of intimate partner violence, stress and type 2 diabetes among South Asian women in the U.S, a population underrepresented in public health research. The findings reveal a high prevalence of intimate partner violence and a significant association between intimate partner violence and both type 2 diabetes and gestational diabetes, underscoring the urgent need to explore health consequences of IPV beyond immediate physical and physiological harm. By demonstrating the potential role of chronic stress in metabolic dysregulation, this study adds to the growing body of literature that links intimate partner violence to long-term health risks. These results have important implications for public health interventions, clinical screening, and culturally competent healthcare services tailored to the needs of South Asian women. In this discussion, we contextualize

these findings within existing research, examine potential mechanisms for underlying associations, and propose policy and healthcare strategies to address these critical health disparities.

In this study, it is evident there is an alarmingly high prevalence of intimate partner violence (66.7%), with a significant association between intimate partner violence and type 2 diabetes, with physical intimate partner violence demonstrating the highest odds ratio. These results underscore the urgent need for culturally tailored interventions that address both intimate partner violence and diabetes prevention within this community. This study highlights that intimate partner violence may be a significant stressor contributing to the dysregulation of physiological systems, such as the hypothalamic-pituitary-adrenal axis, leading to glucose tolerance and diabetes [13]. This emphasizes the interconnectedness of social determinants and chronic disease outcomes in marginalized populations [21].

From a public health perspective, the results align with existing literature that identifies intimate partner violence as a major risk factor for adverse physical and mental health outcomes [19]. Previous research has documented the chronic stress caused by intimate partner violence and its association with conditions like cardiovascular disease and endocrine dysfunction, which are also prevalent in South Asian communities [3,23]. Moreover, South Asians in the U.S. already face a disproportionately high risk of gestational diabetes and type 2 diabetes due to genetic predispositions and unique metabolic factors, such as insulin resistance and reduced β-cell function at lower body mass index (BMI) levels [11]. The intersection of these risks suggests that addressing intimate partner violence in this population may have broader implications for reducing chronic disease and improving health equity.

The findings are particularly significant in the context of the “model minority” stereotype, which often masks health disparities within Asian American subgroups. South Asian women, despite high levels of education and employment in the study sample, reported disproportionately high rates of gestational diabetes, type 2 diabetes and intimate partner violence, pointing to the limitations of socio-economic successes as a protective factor [4]. This highlights the need for nuanced public health strategies that recognize the diversity and unique challenges of South Asian women. Moreover, the prevalence of intimate partner violence in this study exceeds reported rates among other racial and ethnic groups, signaling the need for culturally specific interventions that address stigma, patriarchal norms, and systemic barriers for seeking help.

To address the health needs of South Asian women, theoretical frameworks such as the Ecological Model of Health Behavior and Intersectionality can provide valuable guidance. The Ecological Model highlights the interplay between individual, interpersonal, community, and systemic factors, making it particularly relevant for addressing intimate partner violence and type 2 diabetes in this population [22,24]. Simultaneously, intersectionality can help identify how overlapping identities, such as gender, ethnicity, and immigration status, shape health experiences and access to care. By integrating these frameworks into intervention design, public health practitioners can create comprehensive programs that address the root causes of intimate partner violence, reduce chronic disease risks, and promote resilience among South Asian women.

A key limitation of this study is its reliance on a cross-sectional design, which precludes causal inferences between intimate partner violence and type 2 diabetes. Additionally, the self-reported nature of the data introduces the potential for recall and reporting bias, especially regarding sensitive topics like intimate partner violence. The sample, although diverse, was recruited primarily through online platforms and may not fully represent the broader South Asian population, particularly those with

limited digital access or different socio-cultural contexts. Future studies should employ longitudinal designs and incorporate biomarker data to further explore the mechanism linking intimate partner violence to type 2 diabetes. Expanding recruitment methods to reach underrepresented groups, such as non-English speakers, is also essential for generalizability.

Conclusion

To date, there is no research that examines a potential association between intimate partner violence and type 2 diabetes diagnosis for South Asian Women in the U.S. Furthermore, limited studies exist on the prevalence and impact of intimate partner violence within this population. This study aims to address this critical gap, offering a foundational framework for future research to investigate possible causal relationships between intimate partner violence and type 2 diabetes and develop targeted culturally salient interventions.

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