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Disability and intimate partner violence experience among women in rural Samoa: A cross-sectional analysis

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ABSTRACT

Background: Women with disabilities experience higher rates of intimate partner violence (IPV). Evidence suggests this violence often manifests in more subtle and severe forms over longer periods of time. There is limited evidence on this association in the Pacific Islands region, despite facing one of the highest global prevalences of IPV.

Objective: Examine the prevalence of disability and the association between disability and types of IPV experience among women in rural Samoa as part of the EVE Project.

Methods: This study analysed cross-sectional data collected with nine communities in rural Samoa between December 2022 and February 2023. Enumerators collected data with 707 women on tablets using REDCap. IPV was measured using the standardised Demographic and Health Survey (DHS) domestic violence methodology. Disability was assessed using the Washington Group questions. Logistic regression was conducted to examine the association between disability and experiences of IPV (physical, sexual, emotional and economic violence) among women.

Results: Having a disability was significantly associated with increased IPV experience among women in this study. When controlling for age and education, women with severe disability were significantly more likely to experience sexual (OR 4.31; $p = 0.01$) and emotional (OR 2.87; $p = 0.02$) IPV, when compared to women with no disability.

Conclusions: Our findings point towards a greater vulnerability of women with disabilities to IPV, and particularly sexual and emotional IPV, in rural Samoa. Qualitative research in partnership with women with disabilities is essential to inform the design of measurement tools and prevention programmes that are grounded in the context-specific experiences and needs of all women with disabilities.

1. Introduction

Intimate partner violence (IPV), the most common form of violence against women (VAW), is a public health and human rights issue affecting approximately one in four women worldwide.[1] Women who experience IPV in their lifetime are more likely to have poorer health outcomes, both in the short and long term, such as increased depression and anxiety, and poorer sexual and reproductive health.[2,3] IPV has an enormous economic cost to women, families and societies and its prevention is an urgent global priority.[4]

More than one billion people worldwide are estimated to be living with a disability, the majority of whom live in low- and middle-income countries.[5] Evidence suggests that women with disabilities are at increased risk of experiencing IPV, and that they experience both more subtle and severe forms of violence over longer periods of time, when compared to women without disability.[6] Data from Africa (South Africa, Rwanda, Ghana, Tanzania and Uganda)[7–10] and Asia (Afghanistan, India and Nepal)[7,11–13] indicates that disability can increase a woman's risk of experiencing multiple types of IPV, including physical, sexual, emotional and economic abuse, as well as controlling behaviours. This association has also been found to increase with the severity of disability; women have a higher risk of experiencing IPV if they have a severe disability when compared to a moderate disability.[7,8,11,12]

Theoretical models of disability, such as the social model and

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feminist disability theory, are useful in exploring why women with disabilities are at increased risk of experiencing IPV. The social model of disability, viewing disability as socially constructed, frames disability as a product of the physical and social environment that causes marginalisation and exclusion for people with disabilities.[14] While the social model at the time represented a move away from a deficit centred biomedical view of disability,[14] it has faced much critique, including its inability to account for the intersection of disability and gender, amongst other things.[15] Feminist disability theorists argue that it is the interrelations between oppressions of sexism and disablism which can begin to explain the pathways between disability and VAW.[15,16] In addition, they promote the need to move beyond traditional models of IPV to account for disability-specific experiences of IPV that are not captured in traditional methods of research and programming.[15,17] What both of these theoretical perspectives have in common is that they argue for a structural understanding of disability, viewing it as a negative interaction between a person with disability and their environment, that requires structural change to prevent this negative experience.

Aligning with this perspective, the global public health literature describes the high risk of IPV among women with disabilities as a consequence of intersecting structural factors, such as poverty, education and inequitable gender norms.[18–20] How these factors manifest within intimate relationships has been explained through examples of economic dependence and gender roles. Women with disabilities often depend on their male partners financially and for care, which limits their opportunity and resources to leave violent relationships and seek help for experiences of violence.[21–23] Women with disabilities also face engrained structural discrimination and stigma, which can be further exacerbated by inequitable gender norms that increase their vulnerability to violence if they are unable to meet their expected gender roles, such as homemaker or child bearer, because of their disability.[24,25]

Globally, significant gaps still remain in the evidence on disability and IPV. Evidence from South America and the Pacific Islands is particularly poor, despite both of these regions facing a high prevalence of IPV. Similarly, few studies have explored diverse types of IPV and less is known about disability and emotional/economic IPV, as well as disability-specific types of IPV.

The Pacific Island of Samoa is located in the region with one of the highest global prevalences of IPV. An estimated 40% of women aged 15–49 in Samoa have experienced physical, sexual and/or emotional violence from an intimate partner in their lifetime.[1] IPV in Samoa is driven by a complex interplay of social, structural and economic factors, including inequitable gender norms, the normalisation of violence, and financial instability.[26] The intersection of gender, disability and violence is also a pressing health and social concern in Samoa. While VAW with disabilities is poorly understood in this context, anecdotal evidence from the Office of the Ombudsman's 2018 inquiry into family violence suggests that women with disabilities experience higher rates of violence in their families which requires specific targeted responses.[27] Women with disabilities in Samoa also face multiple barriers in accessing essential services to meet their sexual and reproductive health needs, including accessing support for experiences of violence.[28] They are less likely to report abuse to the police, which is further hampered by limited understanding amongst police of how to handle cases of VAW with disabilities.[27]

Despite the high prevalence of IPV in Samoa, and the knowledge that women with disabilities face significant barriers in reaching their needs in this setting, there is no quantitative empirical evidence on the association between disability and IPV. This knowledge would provide the evidence needed to advocate for targeted programmes to prevent IPV among women with disabilities and contribute to intervention design in this setting. To address this evidence gap, we conducted a post-hoc analysis of quantitative data collected with nine rural communities in Samoa with the aim of: 1) describing the prevalence and severity of disability among women in Samoa, and 2) exploring the association between disability and different types of IPV experience among women.

2. Methods

2.1. Study design

The data presented in this study were collected as part of the EVE Project (Evidence for Violence prevention in the Extreme) in Samoa.[29] Samoa is a Pacific Island located between Fiji and Tonga with a population of approximately 200,000 inhabitants. We analyse data from a cross-sectional survey conducted between December 2022 and February 2023 which assessed the prevalence, risk and protective factors for VAW experience across nine rural villages in Samoa. The survey was conducted in partnership with the Samoa Victim Support Group (SVSG), the country's largest provider of support services for women and children experiencing violence, the National University of Samoa, and the Samoa Bureau of Statistics (SBS). From each of the nine villages, 130 households were randomly selected to participate in the survey. Using a network of SVSG village representatives who have been engaged in the EVE project for over three years as community-based researchers, eligible women aged 16–64 years were invited to attend the Samoa Village Health Survey on a prespecified date and location in each of the nine villages. One woman from the first 130 households was randomly invited.

2.2. Data collection

Trained enumerators were gender matched with participants and data collection took place on a tablet in a private space at a central location. A self-completion design was selected to reduce potential bias when answering sensitive questions on violence. The survey was available in English and Samoan and the Samoan translations were produced by SVSG and approved by a local advisory committee. The enumerators obtained informed consent from participants prior to starting the survey and were available to support the participants with survey completion should they require assistance. Ethical and safety procedures were in place throughout the survey, adhering to the WHO's ethical and safety recommendations for VAW intervention research,[30] and enumerators were trained to recognise signs of distress using a traffic light system. Counselling services were available on the day, and in the future, should participants need them. All participants received a 2023 calendar with information of social services on the back. Participants were compensated $30 (approximately £10) for their participation.

2.3. Survey measures

2.3.1. Outcome variable

The outcome of interest in this study was past 12-month experience of IPV. To assess the prevalence of physical, sexual and emotional IPV among women, the DHS-MICS domestic violence module was used.[31] This method was chosen to ensure comparability with data collected by SBS on IPV prevalence in 2019. Women who identified as being ever-partnered (ever married or cohabited with a partner) were asked about whether they had experienced any of seven acts of physical IPV, three acts of sexual IPV and three acts of emotional IPV perpetrated by their current or most recent partner (Table 1). To assess the prevalence of economic IPV by a current or most recent partner, we used five items from the SEA-12 scale by Postmus et al.[32] If women answered yes to any of these acts of IPV, they were asked whether this happened sometimes, often, or not in the past 12 months. Women who answered sometimes or often were coded as having experienced IPV in the past 12 months.

2.3.2. Explanatory variables

Disability was the main exposure of interest in this study. To assess the prevalence and severity of disability the Washington Group Short Set of Disability Questions[33] was used, which also aligns with data collected by SBS in 2019.[31] Women were asked whether they have any difficulty with six items, including hearing, seeing, walking,

Table 1
Types of violence and corresponding items.

Violence type	Items
Physical IPV	Push you, shake you or throw something at you; slap you; twist your arm of pull your hair; punch you; kick you, drag you or beat you up; choke you or burn you; threaten to attack you with a knife or other weapon.
Sexual IPV	Physically force you to have sexual intercourse; physically force you to perform other sexual acts; force you with threats or another way to perform sexual acts.
Emotional IPV	Humiliate you in front of others; threaten to hurt or harm you or someone you care about; insult you or make you feel bad about yourself.
Economic IPV	Prohibit you from getting a job or earning money; taking earnings from you against your will; refuse you money for household expenses; exclude you from financial decisions; build up debt under your name.

remembering/concentrating, communicating and self-care. Participants could respond with either: no difficulty, some difficulty, a lot of difficulty, or cannot do it at all. Participants who answered no difficulty to all items were coded as no disability, participants who answered yes to no more than some difficulty on at least one item were coded as mild disability, and participants who answered lots of difficulty or cannot do at all to at least one item were coded as severe disability. Categories were mutually exclusive and this coding approach aligns with the approach taken by two recent studies of disability and IPV in Nepal and Tanzania.[8,12]

Covariates (Table 2) included demographic characteristics (age and education), household food insecurity, experience of child abuse, gender views, and perceived social support. Covariates were selected based on a review of relevant literature, including studies on disability and IPV in other contexts, and studies of the factors associated with IPV in Samoa, as well as prior in-depth qualitative research exploring the drivers of VAW in Samoa. From existing literature on disability and IPV experience in other contexts, we included age, education and food insecurity.[7,8,12] Based on analyses of factors associated with IPV in Samoa we included gender views and experiences of child abuse because of their association with IPV experience in this context.[26] Social support was included based on prior qualitative research in Samoa and consultation with local stakeholders which indicated its potential to act as a protective factor against IPV experience in this context.

2.4. Data analysis

Statistical analysis was completed in STATA17. Descriptive statistics were calculated using proportions. We then used Pearson's chi-squared test (for categorical variables) and t-tests (for continuous variables) to assess the bivariate association between sociodemographic characteristics and disability severity, the exposure of interest, and sociodemographic characteristics and IPV, the outcome of interest. We also calculated bivariate associations between disability severity and past year experience of IPV. Secondly, we used multivariable logistic regression to examine the association between disability severity and different types of past year IPV, adjusting for covariates and potential confounders. Multivariable logistic regression models were constructed based on the findings of the bivariate analyses and the wider evidence base. Age, food insecurity, gender views and child abuse were included due to their significance in the bivariate analysis and indication from the broader literature. While education did not reach significance in the bivariate analysis, we included the variable in later analyses due to strong supporting evidence from the wider literature of its association with both the exposure and outcome. Social support was not included in the logistic regression due to lack of significance in the bivariate analysis and limited supporting evidence in the wider literature. We had five outcomes of interest in the logistic regression analysis: any past year IPV (physical, sexual emotional and/or economic) and past year experience of each of the four individual types of IPV. For each IPV outcome, we constructed four models. Model one was adjusted for age, model two for age and education, model three for age, education and food security, and model four for age, education, food security, gender views and experience of child abuse.

Table 2
Coding of covariates[a].

Covariate	Tool	Items and coding
Household food insecurity	The Household Hunger Scale[34]	The full three items were included relating to food availability in the household. Response options included never, rarely, sometimes and often. Moderate/severe food insecurity included those who answered sometimes or often to any of the items. Those who answered rarely were coded as mild food insecurity and those answered never were coded as none.
Child abuse	Pacific Islands Families study which draws on the Exposure to Abusive and Supportive Environments Parenting Advisory (EASE-PI) scale[35]	Seven items were included from the Pacific Islands Families study tool relating to specific acts of physical violence perpetrated by parents or caregivers. Response options included never, rarely, sometimes, often and very often. Any positive response to the seven items was coded as having experienced child abuse.
Gender views	Adapted inequitable sub-scale of the Gender Equality Scale (GEM)[36]	Nine items were included: six from the original inequitable norms sub-scale relating to acceptance of VAW and gender roles, and three new context specific items were added relating to gender roles in Samoa based on extensive qualitative work. Response options included strongly disagree, disagree, agree, strongly agree. Total and mean GEM scores were calculated for each respondent. The mean GEM scores are presented from 0 to 1, with higher scores corresponding to greater support for gender equity.
Perceived social support	Adapted Multidimensional Scale of Perceived Social Support[37] (MSPSS)	Fifteen items were included: twelve items from the original MSPSS scale on perceived social support from a significant other, friend or family, and three additional items relating to social support from social media based on extensive qualitative work in Samoa. Response options included strongly disagree, disagree, agree, strongly agree. Total MSPSS scores were calculated for each respondent and categorised as low, medium or high social support based on tertiles.

[a] See appendix 1 for complete list of items included in measurement scales.

The response rate among women for the survey was 60.4%. Missingness was below 6% for all variables. For the disability variables, 27 women had missing data for disability severity (3.8%), and missingness ranged from 12 to 34 (1.7–4.8%) for the individual disability types. For

Table 3
Women's socio-demographic characteristics, disability and past-year IPV.

Characteristic	N (%)	No disability	Mild disability	Severe disability	*F* (P-value)	Any past-year IPV[a]	*F* (P- value)
Total sample	**707 (100)**	461 (68%)	138 (20%)	81 (12%)		24%	
Age (N = 676)							
16–19	95 (14)	16%	7%	16%	*7.80* **(0.00)**	2%	*0.45* (0.67)
20–29	161 (24)	29%	15%	14%		22%	
30–39	150 (22)	23%	17%	20%		28%	
40–49	134 (20)	21%	20%	10%		23%	
50–59	99 (15)	7%	35%	24%		19%	
60–64	37 (5)	4%	6%	16%		6%	
Education (N = 687)							
Up to primary	48 (7)	6%	10%	10%	*1.94* (0.17)	11%	*3.54* (0.06)
Secondary	529 (77)	76%	76%	83%		81%	
Higher	110 (16)	18%	14%	7%		8%	
Household food insecurity (N = 707)							
None	521 (74)	78%	63%	67%	*5.89* **(0.01)**	60%	*7.88* **(0.01)**
Mild	135 (19)	16%	30%	21%		30%	
Moderate/severe	51 (7)	6%	7%	12%		10%	
Gender views (N = 701)							
Supports gender equity (mean = X)	0.67	0.68	0.67	0.64	(0.30)	0.62	**(0.00)**
Child abuse (N = 707)							
Any experience of child abuse	353 (50)	46%	59%	60%	*5.60* **(0.02)**	65%	*13.13* **(0.01)**
Social support (N = 701)							
Low	16 (2)	2%	3%	4%	*1.74* (0.21)	1%	*1.73* (0.21)
Medium	245 (35)	34%	30%	47%		43%	
High	440 (63)	64%	67%	49%		56%	

Bolded p-values indicate significance <0.05.
F: Design-based F statistic to account for survey design.
[a] Any IPV includes any physical, sexual, emotional, and/or economic IPV in the past year.

Table 4
Severity of individual disability types among women.

Disability type		N (%)
Difficultly seeing	None	565 (81)
	Mild	85 (12)
	Severe	45 (7)
Difficulty hearing	None	626 (91)
	Mild	32 (5)
	Severe	30 (4)
Difficulty walking	None	598 (86)
	Mild	73 (10)
	Severe	27 (4)
Difficulty concentrating	None	608 (88)
	Mild	65 (9)
	Severe	23 (3)
Difficulty with self-care	None	657 (94)
	Mild	29 (4)
	Severe	10 (1)
Difficulty communicating	None	643 (96)
	Mild	21 (3)
	Severe	9 (1)

the IPV variables, 35 women had missing data for any IPV in the past year (5.0%), and missingness ranged from 34 to 39 (4.8–5.5%) for the individual IPV types. Missingness of the IPV variables was likely higher due to the sensitivity of the questions. Those with missing data were excluded from the analysis. We took account of clustering in the data using appropriate weights and the svyset command in Stata.

3. Results

A total of 707 women completed the survey (Table 3). Women were aged 16–64 years and the majority (77%) had secondary education. 26% of participants experienced some level of food insecurity, 79% had low or medium levels of support for gender equality, and 50% had experienced some form of child abuse. Nearly all women had either medium (35%) or high (63%) levels of social support across four domains which included friends, family, significant other and social media.

Of the 707 survey respondents, 68% reported no disability, 20% reported living with mild disability, and 12% reported living with severe disability. Generally, mild and severe disability increased with age, and educational attainment was lower among those living with mild or severe disability. With regard to the type of disability, difficulties with seeing (19%), walking (14%) and concentrating (12%) were the most prevalent, followed by hearing (9%), self-care (6%) and communicating (4%) (Table 4).

In the bivariate analysis in Table 5, women living with mild (29%) and severe (37%) disability were significantly more likely to experience any past year IPV (physical, sexual, emotional and/or economic) when compared with women who reported no disability (20%). This was also true for past year sexual and emotional IPV. For women with no disabilities, the prevalence of sexual IPV was 4%, compared to 12% for women living with mild disability, and 14% for women living with severe disability. Similarly, the prevalence of emotional IPV was 7% among women with no disability, compared to 13% among women living with mild disability, and 19% among women living with severe

Table 5
Prevalence of IPV types among women by disability status.

IPV type		Disability severity			
		No disability (N = 461)	Mild (N = 138)	Severe (N = 81)	F (P-value)
Any IPV	170 (24%)	92 (20%)	40 (29%)	30 (37%)	4.17 **(0.04)**
Physical IPV	99 (14%)	55 (12%)	25 (18%)	17 (21%)	3.26 (0.08)
Sexual IPV	42 (6%)	18 (4%)	17 (12%)	11 (14%)	7.23 **(0.02)**
Emotional IPV	64 (9%)	32 (7%)	18 (13%)	15 (19%)	6.55 **(0.02)**
Economic IPV	127 (18%)	69 (15%)	29 (21%)	22 (27%)	2.73 (0.11)

Table 6
Adjusted odds ratios of the association between disability status and past-year IPV among women.

	Model 1 *adjusted for age*		Model 2 *adjusted for age and education*		Model 3 *adjusted for age, education and food insecurity*		Model 4 *adjusted for age, education, food insecurity, gender views and child abuse*	
Disability status	**OR (95% CI)**	**P-value**	**OR (95% CI)**	**P-value**	**OR (95% CI)**	**P-value**	**OR (95% CI)**	**P-value**
ANY PAST YEAR IPV[a]								
Mild disability	1.58 (0.76–3.27)	0.19	1.60 (0.69–3.70)	0.23	1.43 (0.62–3.27)	0.35	1.29 (0.57–2.95)	0.50
Severe disability	2.29 (0.95–5.50)	0.06	2.28 (0.94–5.52)	0.06	2.14 (0.85–5.35)	0.09	1.76 (0.63–4.91)	0.24
ANY PAST YEAR PHYSICAL IPV								
Mild disability	1.81 (0.96–3.42)	0.06	1.67 (0.78–3.60)	0.16	1.40 (0.63–3.10)	0.35	1.25 (0.55–2.86)	0.54
Severe disability	1.63 (0.51–5.24)	0.36	1.73 (0.58–5.19)	0.15	1.51 (0.49–4.68)	0.43	1.06 (0.25–4.40)	0.93
ANY PAST YEAR SEXUAL IPV								
Mild disability	3.25 (0.67–15.65)	0.12	3.55 (0.65–17.30)	0.13	3.30 (0.54–20.05)	0.17	3.12 (0.51–19.13)	0.19
Severe disability	4.61 (1.96–12.58)	**0.01**	4.31 (1.55–11.97)	**0.01**	4.21 (1.32–13.45)	**0.02**	3.43 (0.85–13.83)	0.08
ANY PAST YEAR EMOTIONAL IPV								
Mild disability	2.21 (0.84–5.80)	0.10	2.25 (0.79–6.57)	0.12	1.98 (0.68–5.78)	0.18	1.85 (0.61–5.55)	0.24
Severe disability	2.81 (1.22–6.49)	**0.02**	2.87 (1.23–6.71)	**0.02**	2.62 (1.08–6.41)	**0.04**	2.05 (0.74–5.63)	0.14
ANY PAST YEAR ECONOMIC IPV								
Mild disability	1.87 (0.76–4.87)	0.16	1.85 (0.66–5.18)	0.21	1.66 (0.59–4.68)	0.29	1.64 (0.56–4.77)	0.32
Severe disability	2.12 (0.86–5.19)	0.09	2.30 (0.95–5.54)	0.06	2.13 (0.86–5.26)	0.09	1.90 (0.69–5.19)	0.18

OR: odds ratio, CI: confidence interval.
[a] Any past year IPV includes any physical, sexual, emotional, and/or economic IPV in the past year.

disability.

In model 1 of the multivariable logistic regression analysis which was adjusted for age (Table 6), living with a disability was significantly associated with experience of past year IPV. Specifically, women living with a severe disability had 4.61 times the odds experiencing past year sexual IPV ($p = 0.01$) and 2.81 times the odds of experiencing past year emotional IPV ($p = 0.02$) when compared to women with no disability. Living with a mild disability was not associated with IPV across any disability types.

In model 2, when adjusting for age and education, and model 3, when adjusting for age, education and food insecurity, severe disability remained significantly associated with sexual and emotional IPV in the past year. In model 3, when compared to women with no disability, women with severe disability had 4.21 times the odds of experiencing sexual IPV ($p = 0.04$) and 2.81 times the odds of experiencing emotional IPV ($p = 0.04$). However, in model 4, when also adjusting for child abuse and gender views, the association between severe disability and past year sexual and emotional IPV became insignificant.

4. Discussion

Findings from this cross-sectional analysis provide evidence for an elevated risk of experiencing multiple forms of IPV among women living with disabilities in Samoa, consistent with other studies on this topic.[7–9,11–13,21] While living with a disability was associated with all types of IPV, it was sexual and emotional IPV that demonstrated the most robust association with disability in our dataset, and women living with severe disability were at the greatest risk.

The increased risk of sexual IPV among women with severe disability in this study may be understood through feminist disability theory which foregrounds the intersection of disability stigma and gender inequitable norms.[15] Harmful perceptions of women with disabilities as hyper-sexual, or asexual, may contribute to their risk of sexual IPV and limit their opportunities to seek help and be listened to about experiences of abuse.[17,34] Similarly, if women are unable to meet prescribed gender roles because of their disability, or lack autonomy and power in their relationships to refuse sex with their partners, their risk of sexual IPV may be higher.[38] Qualitative data from a needs assessment of sexual and reproductive health and rights, gender-based violence and access to essential services for women with disabilities in Samoa found that disabled women were more vulnerable to sexual violence because of perpetrators' perceptions of them as unable to report experiences of abuse.[28]

Emotional IPV is increasingly recognised as an understudied but prevalent form of IPV in the global literature, with significant consequences for the mental health of survivors.[39,40] In our study, women with severe disabilities were significantly more likely to experience emotional IPV than women without across the first three models, a finding consistent with the broader literature.[7,8,12] This increased risk of emotional IPV might also be a product of pervasive disability stigma and discrimination which can lead to women experiencing emotional and verbal abuse that directly targets their disability. Qualitative evidence from India found emotional IPV to be particularly pervasive among disabled women, where constant experiences of being spoken down to since childhood and into adult intimate relationships had severe implications for women's mental health.[24] In Samoa, women with disabilities face pervasive stigma and discrimination, and this is particularly acute for women with intellectual disabilities who face greater isolation, limited educational opportunities and a lack of support services.[28,41] This stigma and discrimination manifests in a multitude of ways for women with disabilities, such as families not recognising their rights, discriminatory healthcare interactions, particularly when accessing sexual and reproductive health services, and increased experiences of emotional abuse.[28]

The finding that the association between severe disability and past-year sexual and emotional IPV became insignificant when adjusting for additional factors of child abuse and gender views highlights the complexity of the relationship between disability and IPV. Experiencing violence in childhood and support for inequitable gender norms are both recognised globally as risk factors for IPV.[18,20] In Samoa, experiencing physical abuse from parents in childhood was found to be significantly associated with past-year physical, sexual and/or emotional IPV in a multi-level analysis of the 2020 DHS-MICS.[26] While our results indicate that severe disability is associated with a higher risk of IPV, this risk may be closely linked with early life experiences and harmful gender norms. As such, interventions aimed at reducing IPV among women with disabilities should be multi-layered, not only focusing on disability specific factors, but also addressing childhood trauma and harmful gender norms.

While this study makes an important contribution to evidence on disability and IPV, particularly for Samoa and the Pacific region, it does have some limitations. Firstly, the cross-sectional nature of the data limits our ability to draw conclusions about causality between exposure and outcome variables. To mitigate this, we used a past 12-month measure of IPV, rather than a measure of lifetime IPV experience. However, the bidirectional nature of the relationship between disability and IPV makes it impossible to confirm that the exposure (disability) preceded the outcome (IPV). Secondly, as this data comes from the small-scale baseline survey of a pilot intervention, there may be some important covariates missing from our analysis, such as women's

employment status, which have been included in other analyses and may have provided interesting insights. Additionally, the small sample size of 707 women may have limited the power to detect statistically significant relationships in our analysis. Finally, it is likely that the prevalence of IPV among women with disability in this study is underestimated, thus affecting the power to detect an association between disability and IPV in our analysis. The survey instrument used in this study employed a standardised set of questions from the DHS domestic violence module to measure IPV which asks about a specific but limited number of acts of physical, sexual and emotional IPV.[31] While recognised as a global gold standard in measuring IPV prevalence, this methodology fails to account for specific acts of IPV that may be unique to women with disabilities, including but not limited to denial of care, withholding of medication, physical neglect and disability specific verbal abuse, likely resulting in an overall underestimation of the prevalence of IPV among women with disabilities.[17,42]

Our findings have a number of implications for research and programming on IPV and its prevention among women with disabilities in Samoa. While this study provides empirical evidence for a greater vulnerability to IPV among women with disabilities in Samoa, qualitative research is critical to develop understandings of the specific experiences of IPV among women with disabilities in this context and the mechanisms behind this increased vulnerability. Programme design must be informed by qualitative research with women with disabilities in Samoa to understand their lived experiences and forefront their specific needs and priorities for approaches to violence prevention. Women with disabilities must also be actively involved as equal partners and decision-makers in all future research on disability and IPV to ensure it is relevant, safe and meaningful. Similarly, qualitative research is also needed to develop measurement tools that more accurately reflect the experiences of IPV among women with disabilities. This could be done through participatory research to co-create IPV measurement tools through processes of participant engagement and stakeholder consultation. This work would have implications beyond Samoa and contribute to a global evidence gap around how to measure IPV among women with disabilities, which is essential for programme implementation and evaluation.[42]

Our findings also demonstrate that VAW programming in Samoa must be more targeted and inclusive for all women with disabilities because of their increased risk of IPV. Existing services such as those provided by the Samoa Victim Support Group (SVSG), including a free national help-line and a women and children's shelter, may need to be adapted to account for the additional barriers beyond financial constraints that prevent women with disabilities from seeking help for experiences of violence. A broader understanding of disability could also be applied to ensure adaptations and targeted services recognise a broader spectrum of disability beyond physical disability, such as hearing and sight impairments and intellectual disabilities. Barriers to accessing services vary across disabilities and a thorough understanding of these barriers is essential to ensure strategies are inclusive of the diverse needs of all women with disabilities. Disability awareness and inclusivity should be included in the training of staff working with disabled survivors of violence, including case workers, police officers, legal professionals and healthcare workers, to ensure all contact between women with disabilities and these services is appropriate and responsive to their specific needs. Finally, primary prevention activities should work to tackle pervasive disability stigma and its intersections with gender inequality in this context at the community level. Such programmes must be developed in partnership with women with disabilities to be grounded in their lived experiences and expert knowledge.

5. Conclusion

This study found an elevated risk of intimate partner violence among women with disabilities. This evidence should be used to advocate for targeted and inclusive approaches to IPV prevention in Samoa that recognise the specific experiences and needs of women with disabilities. This work requires qualitative research conducted in equal partnership with women with disabilities to understand this increased vulnerability and to design tools and programmes that are grounded in their lived experiences.

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CRediT authorship contribution statement

Hattie Lowe: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Mata'afa Fa'atino Utumapu:** Writing – review & editing, Validation, Conceptualization. **Pepe Tevaga:** Writing – review & editing, Validation, Resources, Project administration. **Papali'i Ene:** Writing – review & editing. **Jenevieve Mannell:** Writing – review & editing, Supervision, Project administration, Methodology, Funding acquisition, Formal analysis, Conceptualization.

Declaration of competing interests

The authors declare they have no competing interests.

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Appendix A. Supplementary data

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