



What Interventions are Cost Effective in Reducing Violence Against Women? A Scoping Review

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Abstract

Purpose To systematically summarise the recent literature on the cost and cost effectiveness of interventions implemented to reduce violence against women (VAW) and decision frameworks guiding resource allocation.

Method A scoping review of scholarly and grey literature on the cost-effectiveness and/or resource allocation for interventions addressing intimate partner violence (IPV), dating violence and non-partner sexual violence perpetrated against women aged 15 years and over. All settings and contexts were eligible, with papers published in English between 2010 and March 2023 included.

Results Nineteen papers fulfilled the inclusion criteria reporting the cost, cost savings and/or cost effectiveness of 24 interventions to prevent IPV and to a lesser extent, other forms of interpersonal violence. Among the 16 economic evaluation studies reviewed, four types of interventions were cost effective in multiple settings or studies, including community activism (Uganda, Ghana), gender transformative interventions with couples and individuals (Ethiopia, Rwanda), specific justice and law enforcement measures (USA) and a combined personnel training, support, and referral programme in General Practice in the UK. Other interventions were cost effective in a single study or had conflicting evidence. Three remaining papers conducted a partial evaluation or cost appraisal providing limited information on the cost or cost-savings of other implemented interventions. No frameworks on resource allocation for the prevention of VAW were identified.

Conclusion While there is some evidence of cost effectiveness emerging for interventions implemented in specific contexts, overall, we find the recent evidence on costs and cost effectiveness of interventions for the prevention of VAW to be limited. Embedding economic evaluation in future effectiveness trials will build critical evidence needed to inform policy and resource allocation decisions based on the value-for-money of interventions. Modelling the benefits and costs of interventions to better understand the societal impacts of programmes at scale is a further research opportunity.

1 Introduction

Global guidelines for the prevention of violence against women (VAW) urge comprehensive action [1, 2], with one-off interventions unlikely to achieve the scale of impact needed to reduce the high prevalence of violence. Worldwide, nearly one in three women experience physical and/or sexual violence [3], with more frequent and severe abuse reported by some women during the COVID-19 pandemic [4–6]. There is an equal need for prevention measures that

Key Points for Decision Makers

Understanding the value for money of interventions implemented to prevent violence against women helps identify which programs can deliver the most benefit within a limited budget.

In this review of the recent literature, four types of interventions were cost effective in more than one setting or study, providing some evidence of the value for money these programmes in specific contexts.

There is considerable scope for economic research to assess other types of prevention interventions in future to support policymaking and scale up decisions going forward.

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address the underlying drivers of VAW, alongside programmes that provide safe support services for impacted women and their families.

A range of interventions have a positive impact in these areas and two noteworthy critiques of the intervention literature summarise the measures working to prevent VAW [7, 8]. In their review of the literature from low- and middle-income countries, Kerr-Wilson and colleagues [7] classified interventions with high- or moderate-quality impact evaluations reporting a statistically significant reduction in physical, sexual, and/or non-partner violence. Interventions with two or more published evaluations meeting these criteria were considered effective, such as specific parenting programmes, women's empowerment programmes, community activism, and programmes with couples' and individuals focused on gender, violence, or substance abuse. Interventions supported by a single study were considered promising, including therapeutic services for pregnant women, women's self-defence, and men's economic and social empowerment. The global review of Ellsberg et al [8] similarly identified promising interventions, although it was less explicit on the classification criteria used. In specific high-income settings, specific victim-advocacy approaches, and home visitation services and outreach support were the two promising interventions reported. There may be other interventions working to prevent VAW globally and an updated review of the impact evaluation literature would be timely in this respect.

Restricted budgets can be a primary constraint for delivering the comprehensive violence prevention strategy needed. Resource allocation, the distribution of limited funding or other finite resources [9], for the prevention of VAW is complex given competing priorities for primary prevention, early intervention, strong systems of response and programmes to support long-term recovery and healing [2]. Moreover, funding for interventions to prevent VAW competes with a myriad of other health and social care issues seeking resources from within the same fixed budget. Decision frameworks guiding resource allocation have emerged in specific areas of health, although have had limited application overall [10] and the extent to which these are used to guide decisions for the prevention of VAW, to our knowledge, has not been subject to review.

Evidence of cost effectiveness is increasingly sought to support the decision process to identify best value for money interventions and to distribute resources according to their highest use possible. Cost effectiveness is a key factor informing decisions of whether pharmaceutical, health technologies or medical services are publicly subsidised in several countries including Australia [11, 12], the USA [13] and the UK [14]. An economic evaluation comparing the costs and consequences of different interventions is required, for example, by the advisory committee overseeing the subsidisation of pharmaceuticals in Australia, to inform cost effective approaches [11, 12]. This review process does not appear to be routine for the subsidisation of most public

health interventions. Rather, where evidence of cost effectiveness may support public health policy or funding decisions, this process occurs in a far less transparent way.

There appears to be limited research to inform the cost effectiveness of interventions addressing VAW. An initial review of the literature by Gold and colleagues [15] of trial-based and modelled economic evaluations in high-income countries (UK, USA) provided preliminary evidence of cost effectiveness for a domestic violence shelter, a programme for women with co-occurring mental health and substance abuse issues and a history of experiencing violence, legislative changes, and a training, support and referral programme in General Practice. A subsequent appraisal of the literature provided a detailed summary of eight papers reporting the cost and cost effectiveness of eight studies in low- and middle-income countries, including some unpublished research [16]. From the published literature, a single combined microfinance, gender, and Human Immunodeficiency Virus (HIV) intervention in South Africa was cost effective. These reviews draw attention to the limited economic evaluation research, gaps in research and the different methods used to assess cost effectiveness. To our knowledge, a comprehensive review of the economic evaluation and costing literature around the prevention of VAW has not been undertaken since Remme's review published in 2014 [16].

Three objectives guided this review:

- (1) to summarise the recent evidence of cost-effective interventions to reduce VAW;
- (2) to summarise resource allocation frameworks and the extent to which these guide decision making; and
- (3) to identify knowledge gaps and major challenges to prioritise future research.

2 Method

This study followed a protocol pre-registered on Open Science Framework [17] and adhered to scoping review guidelines and reporting standards [18, 19]. To ensure a comprehensive and high-quality review, three further repositories were incorporated into the search strategy post-publication of the protocol, and we screened additional studies identified by an expert reviewer for potentially relevant studies. A quality appraisal was also undertaken to identify any major methodological issues to address the objective of identifying gaps or challenges in the literature.

2.1 Eligibility Criteria

Economic and non-economic literature were eligible for review including within-trial and modelled economic evaluations, partial economic evaluations, and cost-appraisal

studies. Guidelines and/or frameworks on resource allocation were eligible. Literature reviews were used to identify published studies eligible for inclusion. No limits were placed on the setting or country contexts, and scholarly and grey literature sources published in English between January 2010 and March 2023 were searched.

The literature was confined to the most common forms of VAW (intimate partner violence [IPV] and non-partner sexual violence [3]; and dating violence among adolescents aged over 15 years). Literature on violence against men or child abuse was excluded, however interventions including VAW and men were eligible if most of the population exposed were women. Books and commentary papers were excluded from review.

2.2 Information Sources

The following repositories were searched for relevant papers:

- Scholarly databases: Medline Complete, EconLit, Cochrane Library, CINAHL Complete, SocINDEX with Full Text, APA PsycInfo, Global Health, CEA Registry Tufts Medical Center, Web of Science and Google Scholar.
- Websites of global organisations collating and/or publishing research, policy, and guidelines on VAW: UN Women, WHO; UN Development Programme; World Bank, What Works to Prevent Violence, Sexual Violence Research Institute and Violence Against Women Network.
- Grey literature repositories: National Grey Literature Collection and Social Care Online.
- Government websites including the Ministry of Health and/or Women in the USA, UK, Australia, Switzerland, Singapore, and Hong Kong. These were determined by the research team as likely to publish or commission reports relevant to the topic; and/or having a reported low prevalence of VAW and potentially more likely to have a published resource allocation framework or guiding decision criteria.
- Reference lists of relevant prior literature reviews.
- Papers identified through expert review.

2.3 Search Strategy

The search strategy was developed using terms related to cost, cost effectiveness and resource allocation in consultation with expert librarians. Search terms were entered into each scholarly database with limits applied consistent with the inclusion criteria of the review (Supplementary

Paper 1, Table 1). To search the grey literature, key search terms were entered into Google Scholar and organisation websites to source relevant grey literature publications, with up to the first 100 records retrieved.

2.4 Study Selection

A two-step screening process was conducted. First, the title and abstract of scholarly citations were uploaded to Covidence systematic review software [20]. Independent screening was conducted by two reviewers using Covidence to identify potentially relevant citations (MA & LS). The title and abstract of 390 grey literature citations were screened manually by the two reviewers and maintained the same independent process. Next, the full texts of potentially relevant papers were assessed against the selection criteria with reasons for exclusion recorded. Any conflicts were resolved by discussion or with the addition of a third reviewer (VB) where consensus could not be reached.

2.5 Data Charting

We implemented a data extraction process feasible within the time and resources available for this review. The primary reviewer (LS) extracted the data from included studies using a tool based on published templates and developed to extract economic and non-economic information (Supplementary Paper 1, Table 2; [21, 22]). Major sub-headings of interest guiding the extraction included: aims and objectives, intervention design, target group and setting characteristics, study design and methods, measured outcomes and resource use, key results, and recommendations, study limitations and strengths. The second reviewer (MA) quality checked the data summary of included papers. Extracted cost data were converted to 2021 United States Dollars (USD) using an online cost conversion tool [23].

2.6 Synthesis of Results

The publication frequency of relevant studies between 2010 and March 2023 are reported, and key characteristics of included studies are presented alongside a narrative synthesis of major themes related to costs, cost effectiveness, and resource allocation. We discuss the findings from full economic evaluations separately to partial evaluation studies and summarise evidence of cost effectiveness by intervention type consistent with prior reviews [7, 8]. Multi-component interventions that could not be defined as a single intervention type are reported individually.

2.7 Critical Appraisal

A critical appraisal of economic evaluation studies assessed the extent to which each paper addressed best practice guidelines. The Consensus on Health Economic Criteria (CHEC; [24]) was used to check within-trial or service-based economic evaluations, and the quality assessment in decision-analytic models [25] checked modelled economic evaluations. The critical appraisal was completed by one reviewer (LS) and a second reviewer (VB) cross checked one-quarter of included papers.

3 Results

The title and abstract of 1635 academic papers and grey literature reports were screened from which 40 full-text papers were independently reviewed (28 peer-reviewed papers; 12 grey literature sources; Fig. 1).

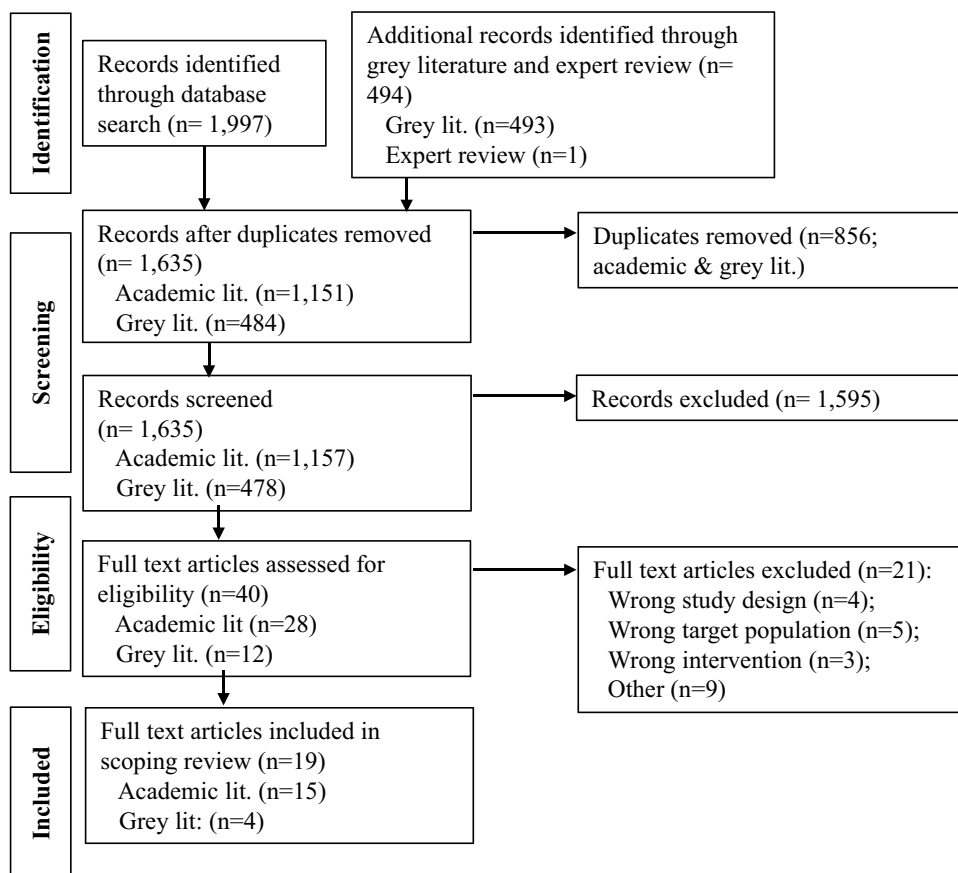
We did not find any literature on resource allocation frameworks, guidelines, or other related criteria used to guide decision-making. Nineteen studies fulfilled the inclusion criteria of this review reporting the cost, cost-savings

and/or cost effectiveness of 24 interventions addressing VAW. Most were published in peer reviewed journals ($n = 15$) and used some primary data collected during a trial or service delivery to evaluate costs or cost effectiveness ($n = 17$). Cost-utility analysis and (social) return on investment analysis was most frequently used ($n = 5$ each), followed by cost-benefit analysis ($n = 4$), and cost-effectiveness analysis ($n = 2$). Three remaining papers undertook a partial economic evaluation ($n = 2$), or cost appraisal study ($n = 1$). Overall, we observed a gradual increase in the number of published studies since 2010, with a marked rapid increase in the number of publications since 2021 after the easing of the pandemic (Fig. 2).

3.1 Economic Evaluation Studies

Sixteen papers conducted a trial-based, service-based or modelled economic evaluation to assess the cost effectiveness of 22 interventions addressing VAW. Ten papers assessed the cost effectiveness of a single intervention or service ($n = 10$), two papers assessed multiple interventions ($n = 5$, $n = 6$ respectively) and one intervention was subject

Fig. 1 PRISMA Flow diagram of the literature search



Notes: Google scholar search results counted in academic literature.

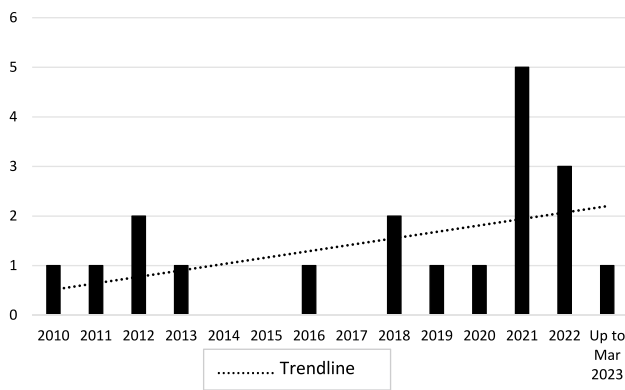


Fig. 2 Publication frequency between 2010 up to March 2023 ($n = 19$)

to four economic evaluations at various stages of scale up ($n = 1$). Study settings included the UK ($n = 6$), USA ($n = 2$), Australia ($n = 1$) and six countries in sub-Saharan Africa [South Africa ($n = 2$), Ethiopia, Ghana, Rwanda, Uganda, Zambia (1 each)].

Nine types of interventions to address VAW were subject to an economic evaluation (Table 1). Couples' interventions, community activism, and economic and social empowerment programmes were implemented in sub-Saharan African countries for the reduction of IPV and variously engaged women and men, men-only and women-only in planned activities. Justice and law enforcement interventions, a perpetrator programme and combined personnel training, support and referral programme in General Practice, and specialist support services were implemented in either the UK or USA in response to IPV and to a lesser extent, to address other forms of interpersonal violence. The cost effectiveness of policy reform (UK), and two multi-component interventions (UK and Australia) were also reported. Key characteristics and detailed findings of individual studies are available in Supplementary Paper 1 (Table 3).

3.1.1 Economic Empowerment and Social Empowerment

There was conflicting evidence of cost effectiveness from two economic and social empowerment programmes implemented in South Africa ([26, 27]; Table 1). When compared to usual practice in control villages, engaging with low-income women participating in a loans programme in gender and HIV-related training was cost effective in reducing physical and/or sexual IPV during pilot phases, and highly cost effective when scaled up [26]. The unit cost to deliver the intervention reduced when the pilot programme was scaled up over two years to reach more women within participating communities (USD\$18 per beneficiary). A second gender-transformative intervention that engaged unemployed women and men living in informal settlements

in related activities reported a higher unit cost per person (USD\$338–\$1919) and relative to outcomes measured, a cost-effectiveness ratio that exceeded the Gross Domestic Product (GDP) per capita and opportunity cost threshold applied [27]. Cost-effectiveness results were more favourable when focusing on women only and from a societal perspective [27].

3.1.2 Couples' Interventions

Engaging couples (and individuals) in gender transformative activities was cost effective in preventing cases of physical and/or sexual IPV when compared to a brief intervention in Ethiopia (IPV education [28]) and control comparator in Rwanda [27]; Table 1). A low unit cost to deliver the intervention in Rwanda per person (USD\$7) and in Ethiopia per community-level beneficiary (USD\$6) were reported. Among the three treatment arms of the intervention in Ethiopia (couples, men-only or women-only), the men-only intervention had the most favourable cost-effectiveness results, with the couples' intervention associated with higher costs and fewer cases of IPV prevented. Whereas the couples' intervention in Rwanda was cost effective in the local context when compared to a control group as reported in subgroup analysis [27]. The cost effectiveness of this couples' programme compared to a gender transformative community mobilisation component subsequently delivered in participating communities is reported below.

Counselling for couples experiencing alcohol misuse and violence was not cost effective in Zambia compared to performing safety checks [27]. The cost to deliver one-to-one therapeutic support was higher (USD\$1404 per beneficiary; Table 1) and relative to the benefits reported, exceeded the cost-effectiveness threshold.

3.1.3 Community Activism

There was some promising evidence of cost effectiveness for community activism interventions for the prevention of IPV in Ghana and Uganda compared to a 'do nothing' alternative ([27, 29]; Table 1). The reduction in physical (Ghana, Uganda) and/or sexual forms of IPV (Ghana) were reported among intervention participants and in the wider community membership in Uganda. The unit cost to deliver community activism was comparatively low (USD\$6 per person) and from a societal viewpoint, was cost saving in Ghana (USD\$4 per beneficiary). Intervention delivery and activities undertaken in the community differed between settings.

The gender transformative intervention in Rwanda incorporating community mobilisation, leadership training and community safe spaces was not cost effective when compared to a couples' intervention [27]. The community component was associated with higher delivery costs and fewer

Table 1 Overview of economic evaluation studies

Intervention type	Citation	Intervention name [comparator]	Intervention description	Target group	Setting	Type of economic evaluation, perspective	Unit cost 2021 USD	CE results reported 2021 USD	CE threshold ^a	Contextual interpretation ^b
Combined economic and social empowerment	[26] ^c	Intervention with Microfinance for AIDS & Gender Equity (IMAGE) [Control villages]	A combined microfinance, and gender and HIV training intervention	Adult women from low-income households and participating in a group loan centres (microfinance component)	South Africa	Within-trial CUA, provider	\$59 per beneficiary (trial) \$18 per beneficiary (scale up)	\$10,617 per DALY averted (trial); \$3186 per DALY averted (scale up)	\$4666 (GDP per capita)	Cost effective (trial) Highly cost effective (scale up)
	[27] ^d	Stepping Stones and Creating Futures (SSCF) [Do nothing]	Small group programme incorporating gender empowerment and livelihoods components	Adult women and men not formally employed, living in informal settlement	South Africa	Within-trial CUA, provider and societal	\$338 per capita (provider) \$1919 per capita (societal)	\$19,345 per DALY averted (provider) \$109,555 per DALY averted (societal)	\$3266 (opportunity cost, provider), \$6374 GDP per capita, societal)	Not cost effective (provider), low probability of being cost effective from a societal perspective
Couples' intervention	[27] ^d	Village Savings and Loans (VSLA)+ couples' curriculum component [Controls] ^e	Small-group gender transformative training	Adult couples with one spouse who is a VSLA member	Rwanda	Within-trial CUA, provider and societal	\$7 per capita (provider, societal)	\$297 per DALY averted (provider, societal)	\$281 (opportunity cost, provider), \$773 (GDP per capita, societal)	Higher probability of being cost effective from a societal perspective
	[27] ^d	Violence and Alcohol Treatment (VATU) [Safety checks]	One-to-one psychotherapeutic intervention	Adult male-female couples, experiencing alcohol abuse and violence with one or more children (aged 8–17)	Zambia	Within-trial CUA, provider	\$1404 per capita	\$10,010 per DALY averted	\$546 (opportunity cost, provider)	Not cost effective
	[28]	Unite for a Better Life (UBL) [Brief IPV education session]	Gender-transformative intervention with an IPV and HIV prevention focus with three intervention arms: women-only, men-only, and couples	Adult men, women, and male-female couples	Ethiopia	Within-trial CEA, provider	\$83 per direct or household-level beneficiary; \$6 per community-level beneficiary	\$3046 per case of physical and/or sexual IPV averted (direct beneficiaries); \$217 per case of IPV averted (community-level beneficiaries)	-	Cost effective/compares favourably with similar interventions
Community activism	[27] ^d	Rural Response System (RRS) [Do nothing]	Community-based intervention to address harmful gender and violence norms	Adult women and men in participating communities	Ghana	Within-trial CUA, provider and societal	\$4 per capita (provider); -\$378 per capita (societal)	\$382 per DALY averted (provider); \$34,448 saved per DALY averted (societal)	\$497 (opportunity cost, provider), \$2202 (GDP per capita, societal)	Higher probability of being cost effective from a societal perspective
	[27] ^d	Indashyikirwa [VSLA only]	Community mobilisation focused on gender and violence norms	Adult male-female couples in participating communities not involved in the couples' intervention	Rwanda	Within-trial CUA, provider and societal	\$21 per capita (provider, societal)	-\$9334 per DALY averted (provider); -\$9,335 per DALY averted (societal)	\$281 (opportunity cost, provider), \$773 (GDP per capita, societal)	Not cost effective
	[29] ^c	An Activist Kit for Preventing Violence against Women and HIV (SASA) [Control communities]	Community mobilization to prevent IPV and reduce HIV/AIDS risk	Adult women, men in participating communities	Uganda	Within-trial CEA, provider	\$6 per person	\$549 per past year case of physical IPV averted	NR	Compares favourably with similar interventions

Table 1 (continued)

Intervention type	Citation	Intervention name [comparator]	Intervention description	Target group	Setting	Type of economic evaluation, perspective	Unit cost 2021 USD	CE results reported 2021 USD	CE threshold ^a	Contextual interpretation ^b
Personnel training	[30, ^f 31] [32, 33]	Identification and Referral to Improve Safety (IRIS) [Usual care in control GP practice/s]	Training, support, and referral in General Practice to identify persons experiencing IPV evaluated at four stages of scale up	General practice staff; screening adult females	UK	Modelled CUA, ROI and SROI, provider and societal	\$10 per woman assessed (pilot) to <\$1 per woman registered (scale up)	\$4779 per QALY [30] Net monetary benefit \$24 (provider); \$46 NMB (societal) [32]; 1.21:1 ROI (provider) [33]; 16.79:1 ROI (societal) [33]; 10.71:1 SROI [33]	£30,000 [30] £20,000 [31, 32]	Cost effective (pilot); cost effective, cost-saving and positive return on investment (scale up)
Justice and law enforcement	[34]	Civil legal aid [Pre-post]	Legal aid services for low-income women who have experienced partner violence	Adult women	USA	Within-trial CBA	\$449 per protection order	BCR 30.75	NR	Positive BCR
	[35]	Domestic Violence Protection Orders [Matched cases, no DVPO]	Short-term violence protection orders (from 14 up to 28 days) for persons experiencing domestic violence	Adult females and males (majority of victim-survivors female)	UK	Within-trial ROI	\$4735 per protection order	0.23:1 ROI	NR	Negative return on investment
	[36]	Civil Protection Orders [Pre-post]	Long term orders (up to 3 years) for women seeking protection from a violent male intimate partner	Adult women currently experiencing, or with a recent history of, IPV	USA	Within-trial SROI	NR	2.41:1 ROI	NR	Positive return on investment
Perpetrators programmes	[37]	Cautioning and Relationship Abuse (CARA) [Matched controls]	Awareness-raising behaviour change intervention for low-risk offenders of domestic violence and abuse	Adult females and males (majority of victim-survivors female, majority perpetrators male)	UK	Within-trial CBA	\$366 per participant	BCR between 2.75–11.1	NR	Positive BCR
High-level policy reform	[38]	Extend DDVC and DVILR entitlements [Current policy]	Expanded access to financial aid and support services	Adult migrants and refugees experiencing domestic violence with NRPF	UK	Modelled CBA using secondary data, societal	NR	BCR between 3.9–4.3	NR	Positive BCR
Support service for survivors	[39] ^g	Refuge services, community outreach and IDVA support delivered by a single provider	Specialist support services for survivors and their children	Women who used the service and their children	UK	SROI using service data, State, women and their children	\$6633 per client of refuge services; \$239 per client of outreach service; \$849 per client of IDVA	8.24:1 ROI all services; 5.56:1 ROI refuge service; 26.35:1 ROI outreach service; 9.4:1 ROI IDVA service	NR	Positive return on investment
Multicomponent interventions										

Table 1 (continued)

Intervention type	Citation	Intervention name [comparator]	Intervention description	Target group	Setting	Type of economic evaluation, perspective	Unit cost 2021 USD	CE results reported 2021 USD	CE threshold ^a	Contextual interpretation ^b
Multiple prevention strategy	[40]	Nurse Family Partnership (NFP); Triple P Universal; Triple P Level 4 groups (Triple P); Secondary School Age Alcohol Supply Reduction (SSAASR); Brief Alcohol Screening and Intervention of College Students in young adults (BASICS); Tutoring by Peers (TbP).	Six prevention interventions to address modifiable risk factors to prevent later physical IPV (age 23) and incarceration (age 25)	Adolescents aged 15 years; followed up at age 23 and 25 years	Australia	Modelled ROI using secondary data	NR	Reduced crime; cases of IPV prevented	NR	Positive return on investment
Risk assessment, victim advocacy and perpetrator programme	[41]	Multi-Agency Stalking Intervention Programme (MASIP) [Status quo, legal sanctions]	Stalking prevention intervention for risk assessment and management of stalking cases by police	Police officers; male and female perpetrators	UK	Within-trial CBA, provider and victims	NR	BCR 2.8 (provider, best case); 3.5 (victim, best case); BCR 82.4 (provider, victim worst case)	NR	Positive BCR

AIDS acquired immunodeficiency syndrome, *BCR* benefit-cost ratio, *CE* cost effectiveness, *DALYs* disability-adjusted life years, *DDVC* Destitution Domestic Violence Concession, *DVILR* Domestic Violence Indefinite Leave to Remain, *GDP* Gross Domestic Product, *HIV* human immunodeficiency virus, *IDVA* Independent Domestic Violence Advisors, *IPV* Intimate partner violence, *NR* information not reported, *NRPF* no recourse to public funds, *QALY* quality-adjusted life year, *ROI* return on investment, *SROI* social return on investment, *USD* United States Dollar

^aCost-effectiveness threshold as reported in the paper (not converted to 2021 USD)

^bRelative to the comparator and cost-effectiveness threshold where reported in the study. Refer to the published paper for more detailed findings. A ratio between one and three times a country's GDP per capita is commonly interpreted as cost effective; and less than one GDP interpreted as highly cost effective [42]. A BCR/ ROI greater than 1 indicates that the benefits outweigh the costs

^cIncluded in the review by Remme et al [16]

^dResults for all participants summarised. Refer to the published paper for more detailed results reported for females only and when the intervention is scaled-up

^eReported in subgroup analysis. Main findings report the cost effectiveness of a community mobilisation intervention compared to the couples' intervention

^fIncluded in the review by Gold et al [15]

^gReference year for costs assumed to be 2020 corresponding with the 2019/20 data collection cited and these have been converted to 2021 USD accordingly Unit costs calculations include women and their children who accessed the service

Costs rounded to the nearest dollar

BCR and ROI reported as ratios and therefore not adjusted to 2021 USD

disability-adjusted life years averted (DALYs), the main outcome measure reported for cost effectiveness.

3.1.4 Personnel Training

The cost effectiveness of a combined personnel training, support and referral intervention delivered in General Practice to support victim-survivors of IPV was evaluated at various stages of expansion within the UK ([30–33]; Table 1). Modelling was used to determine the long-term benefits of the intervention beyond trial periods, reported as quality-adjusted life years (QALYs) gained among victim-survivors [30–32] and economic benefits [33]. An exceptionally low unit cost to deliver the expanded programme was reported (USD < \$1 [32]) and the intervention was cost effective or cost saving at each stage of scale up across the UK.

3.1.5 Justice and Law Enforcement Interventions

Two justice and law-enforcement interventions were cost effective in the US ([34, 36]; Table 1). The economic benefits of civil legal aid services for women who had experienced IPV and were on a low income [34] and long-term protection orders obtained by women against a male partner [36] outweighed implementation costs, indicating a benefit-cost ratio and positive return on investment (ROI). Short-term protection orders, of up to 28 days, piloted in the UK were not cost effective [35]. Fewer police callouts were recorded when the protection order was in place compared to matched controls, but the substantial legal and police resources invested to obtain the order far outweighed the reported economic benefits. When pilot outcomes were extrapolated beyond the pilot phase and modelled for cases where police had previously been called out on multiple occasions, cost-effectiveness results were more favourable.

3.1.6 Perpetrators Programmes

A behaviour change intervention for first-time, low-risk perpetrators of IPV was cost effective when delivered in the UK ([37]; Table 1). Participating police areas identified and recruited male (> 90 %) and female offenders into the programme, which aimed to reduce recidivism as measured at 6- and 12-months following the intervention. When compared to a control group, the economic benefits of reduced crime among intervention participants significantly outweighed the cost of implementation (USD\$366 per participant).

3.1.7 High-level Policy Reform

A single study modelled the potential impact of a change in national policy to expand services and financial support to

migrants and refugees experiencing domestic violence with no recourse to these public funds under current UK policy ([38]; Table 1). The economic gains of reducing domestic violence among victim-survivors who would benefit under the proposed policy outweighed the additional cost of providing the support. Overall, a positive benefit-cost ratio over 10 years is reported (between 3.9 and 4.3) with some uncertainty noted in the number of people expected to benefit under the proposed policy.

3.1.8 Support Services for Survivors

The return on investment in support services for survivors of domestic violence delivered by a single UK provider was evaluated, incorporating refuge/housing services, community outreach and independent domestic violence advocacy support [39]. The evaluation focused on women and their children as primary service users, with the costs of delivery obtained from service data. Service data and expert opinion determined the impact of providing services on the safety, health, social and economic wellbeing of users. A proxy monetary value for each outcome underpinning these impact areas was estimated, with the benefits outweighing the cost of delivering each service and an overall positive return on investment across all supportive programmes.

3.1.9 Multicomponent Interventions

A single study evaluated the long-term benefits of investing in six specific interventions. These included individual-, family-, school-, and substance abuse-focused interventions for later prevention of crime and IPV modelled on an Australian population of adolescents and in later adulthood ([40]; Table 1). We included this study given that adolescent interventions formed part of the multiple prevention strategy and prevented cases of IPV were reported. However, it is noteworthy that parenting interventions were included and that the modelling captured the intergenerational benefits of these prevention interventions. The annual reduction in cases of physical IPV perpetration and the cost savings from reduced crime in early adulthood (10-year lag effect modelled) were estimated and a positive economic return from investing in the multiple prevention intervention strategy reported.

A single study evaluated the costs and outcomes of implementing a combined victim advocacy, multidisciplinary risk assessment, and perpetrator intervention initiated across three police areas in England in response to stalking cases ([41]; Table 1). Aimed at reducing the risk of re-offending and the economic impact of stalking on victim-survivors, tailored health interventions were delivered to perpetrators and advocacy services were offered to victim-survivors on a case-by-case basis. A case study approach was used to

evaluate the programme, whereby the economic benefits and costs associated with the intervention were determined for a particular case of stalking, then compared to a counterfactual best- and worst-case scenario. The economic benefit to providers outweighed the cost of implementing the intervention in the case of stalking presented, with only marginal economic benefits for victim-survivors reported due to the ongoing cost attributable to stalking that occurred prior to the intervention.

3.2 Partial Economic Studies

The remaining three papers conducted a partial evaluation ($n = 2$) or cost appraisal ($n = 1$) of six interventions to address VAW. Further details of each study are reported in Supplementary Paper 1 (Tables 4 and 5).

Briefly, two partial economic evaluations offer incomplete evidence of the cost effectiveness of an advocacy service in the UK and a high school-based intervention in the USA. Improved feelings of safety and a reduction in health service use were observed among beneficiaries following screening and referral for IPV by an advocate located within a hospital emergency and maternity departments when compared to persons accessing community-based advocacy services [43]. Training coaches to deliver violence prevention sessions to high-school student athletes was associated with a reduction in reported sexual violence perpetration among participants and cost savings [44]. Further research is needed that compares the incremental costs and outcomes relative to outcomes reported [43] and implementation costs [44] to enable determination of intervention cost effectiveness to comparator alternatives.

Finally, a cost appraisal study provided preliminary evidence of the costs of scaling up trialled interventions [45]. This costing study is linked to an economic evaluation study reviewed [27] and reported the cost of delivering interventions on a national scale in the setting where the trial took place. The per-unit cost of delivering community-activism in Ghana, the couples' and community mobilisation intervention in Rwanda, and economic and social empowerment in South Africa was expected to reduce if scaled up for national delivery.

3.3 Critical Appraisal Summary

Full economic evaluation studies were subject to a critical appraisal with results presented in Supplementary Paper 1 (Tables 6 and 7). Overall, the valuation of costs varied in quality with start-up, indirect and research-related costs inconsistently reported across the included studies [34, 37]. While it may be appropriate to exclude some of these costs from a narrower provider perspective, there is also a chance that implementation costs were underestimated as a

result. The comparator intervention and cost-effectiveness threshold were not always described and it was not always clear if an incremental analysis of intervention costs compared to the comparator was reported [28], and some studies excluded sensitivity analysis [34, 37]. The completeness of uncertainty testing was an issue for modelling studies with structural and methodological uncertainty not reported and it was unclear to what extent secondary data informing model parameters were subject to a quality appraisal [30–32, 40]. Two studies that drew on existing costing or economic evaluation guidelines [46, 47] rated well against the quality checklist [27, 28].

4 Discussion

This review systematically synthesised the recent literature on cost and cost effectiveness of interventions to reduce VAW. We endeavoured to summarise this literature to provide a comprehensive overview of the recent evidence in the field globally and to identify potential directions for future economic research.

The literature synthesis was challenging for several reasons. We found limited evidence, reviewing only 16 economic evaluation studies conducted alongside a trial, service delivery or undertaking a modelled analysis of several types of interventions delivered in contrasting settings and contexts. We noted several differences between studies evaluating similar interventions, in terms of the trial design, delivery and intensity of programmes, selected comparator intervention and targeted groups, in addition to differences in methods for assessing costs and outcomes. While most studies assessed costs and benefits from a provider viewpoint, a range of public sector decision-maker perspectives were potentially considered (e.g., health, justice). Whereas some studies assessed cost effectiveness based on a single outcome measure (e.g., past year reduction in cases of IPV) with narrative reporting of other secondary outcomes, others valued multiple outcomes by monetising and reporting direct and/or indirect economic benefits of reducing mainly IPV.

This review identified some divergence in the focus of violence prevention interventions across countries. Economic evaluations conducted in low- and middle-income countries included empowerment, activism and couples' training interventions, whereas in high-income countries, interventions focused more on training personnel, law enforcement, support services and perpetrator engagement. Adapting interventions to local needs and capacity is critical for delivering suitable prevention measures, as is selecting economic methods that suit end users. However, the heterogeneity that exists within the limited recent literature means that the cost effectiveness of interventions cannot be compared easily.

We identified some evidence of cost effectiveness emerging for specific interventions which had been evaluated. This provides some initial evidence to inform decision making in these specific areas, particularly considering the limited economic evidence base and the fact that investment in these interventions must otherwise be made without any economic evidence. However more studies are strongly recommended to strengthen the investment case for these types of intervention. Interventions with conflicting evidence of cost effectiveness (social and economic empowerment; [26, 27] and those limited to a partial evaluation require more research before any definitive conclusions can be drawn. An in-depth look at the drivers of cost ineffectiveness in the studies where there is conflicting evidence may be beneficial.

Together with earlier reviews of the economic research [15, 16], we found that few interventions with evidence of reducing VAW have also been subject to an economic evaluation to date. The recommendation of Gold et al [15] to embed economic evaluation studies within effectiveness trials resonates today and assessing interventions with ‘effective’ or ‘promising’ evidence of preventing violence not yet subject to a full economic evaluation is an important opportunity for future research [7, 8]. A retrospective economic analysis of interventions already implemented may be possible if detailed administrative data were accessible for research purposes. Administrative data would need to include cost and outcome data to enable a comparison between the intervention and control, otherwise an economic evaluation is not plausible. Understanding the value-for-money of economic transfer programmes, self-defence, therapeutic support for pregnant women, and interventions with female sex workers are examples of interventions that fall within this category. Economic evaluation of interventions for reducing non-partner and non-physical forms of VAW are clearly needed, with most of the literature to date reporting the cost effectiveness of interventions for addressing IPV.

In the recent literature, we noted that modelling has been used selectively to explore the cost of scaling-up interventions [45], cost effectiveness of intervention beyond trial periods [30–32], estimating the impact of policy changes [38] and potential cost effectiveness of replicating interventions in different contexts [40]. There is scope to develop standardised modelling techniques for a comprehensive and comparative cost-effectiveness analysis of prevention interventions in the future. Finally, we noted that cost-benefit analysis and return-on-investment techniques are increasingly being used to assess the cost effectiveness of interventions to reduce VAW, which may reflect a broader preference among local decision makers for these methods. The advantage is that multiple outcomes can be valued to reflect the economic benefits to society, with benefits to

victim-survivors (improved productivity and income, less property damage) and providers (reduced service use, less crime) already measured. These methods can readily capture the costs and benefits and be easily understood by decision makers, particularly for outcomes valued using market rates. More work is needed to explore the costs and benefits of preventing VAW that cannot be easily quantified and converted to a dollar value. For example, qualitative methods, which were used to capture the wider social impact of violence prevention [33]. Qualitative approaches incorporated within return-on-investment studies facilitated the identification of a wide range of outcomes and this enabled a nuanced evaluation of the intervention.

In future, economic evaluation could consider other benefits for children no longer exposed to violence and other indirect benefits within local communities making progress toward prevention goals. Incorporating this broader perspective would encourage more nuanced research and future dialogue around the optimal ‘suite’ of prevention interventions from an intergenerational and societal viewpoint and in turn, drive better allocation decisions in future. Future research could explore the methods being used to monetise the impact of interventions addressing VAW with a view to making some specific recommendations for standardising cost-benefit and return-on-investment methods going forward.

4.1 Review Strengths

The comprehensive review of recent scholarly and grey literature undertaken ensured a range of materials were searched, including research studies not published in peer reviewed journals. Screening was conducted according to a pre-defined protocol, and the literature was independently reviewed by two members of the research team. We summarised the recent cost-effectiveness evidence by intervention type to be consistent with other reviews. We included intervention studies that aimed to reduce IPV and non-partner sexual violence; however, some interventions did not exclusively address male-female abuse [41]. We included studies where most of the population exposed were female victim-survivors and male perpetrators of violence and future reviews could explore the cost effectiveness of intervention studies with men and women as victims and perpetrators of violence, programmes aimed at reducing interpersonal violence and other forms of IPV such as economic abuse and coercive control. Whether it is cost effective to address VAW within a broader framework of interpersonal violence could be a further opportunity for research.

4.2 Review Limitations

Despite an exhaustive and rigorous search for relevant literature, we located no research allocation literature, nor other

relevant criteria for decision making. Understanding the optimal distribution of limited resources relative to population needs is a shared priority and is also a key consideration in progressing global goals of eliminating VAW. While it may be the case that resource allocation narratives are lacking because of the limited economic evaluation research to date, it could also be that guidelines or criteria for decision making are not routinely published, or that the search terms used were not sensitive enough. It could also be the case that such guidelines do not exist, and decisions are more ad hoc and less transparent. Our search was limited to publications in English due to limited capacity for language translation and thus we could have excluded relevant studies in other languages. Data extraction was performed by the primary reviewer and cross-checked by the second reviewer. It was also necessary to set limits on the number of publications retrieved from grey literature sources to the first 100 results and it is possible that relevant literature was overlooked for this reason. Overall, the search for grey literature involved multiple repositories and it was necessary to search using key terms to ensure salient papers were not overlooked. Despite this comprehensive search, papers eligible for inclusion may have been overlooked due to the search limits applied, notably the constraints placed on the number of grey literature records retrieved. This is an acknowledged limitation of the study.

As evidence of cost effectiveness builds over time, alternative ways to present the literature could be explored including by sector (e.g., health, justice, social), delivery platform (e.g., school, workshop, community), target group (adolescents, adults, whole-of-population) among other possibilities. Finally, assessing the quality of studies conducting return-on-investment and alternative modelling methods was challenging compared to those using alternate economic evaluation methods. These study types did not perform as well on the quality appraisal, in part because these tools were developed to assess health technologies [24] and decision-analytic models [25].

5 Conclusion

Eliminating VAW hinges on comprehensive action and with limited resources to support this, more research is needed to assess the cost effectiveness of interventions being implemented globally for this purpose. We reviewed 19 published studies conducting a full or partial economic evaluation of interventions implemented primarily to reduce IPV. There is some evidence of cost effectiveness for community-activism approaches for the prevention of IPV in Ghana and Uganda, and gender transformative interventions engaging couples and individuals in Ethiopia and Rwanda. Civil legal aid services (USA), long-term protection orders (USA), a combined personnel training, support and referral programme in

General Practice (UK), and support services were cost effective in response to IPV. There is considerable scope to assess the value-for-money of these interventions in other settings and to explore the cost effectiveness of other measures, particularly those with evidence of being effective but not yet subject to an economic evaluation. Embedding economic evaluation within future effectiveness trials is critical, as is developing comprehensive and comparative models of interventions to prevent VAW to inform programming, policy, and scale up decisions.

Supplementary Paper 1 details the search terms used, key headings for data extraction, key characteristics of the studies included, and results of the critical appraisal.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s40258-023-00870-0>.

Declarations

Competing Interests The authors have no competing interests to declare that are relevant to the content of this article.

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Consent to Participate Not applicable.

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