A Systematic Mapping of Public Health Primary Prevention Interventions with relevance for Policing

Abstract

This study aimed to utilize systematic mapping techniques to assess existing empirical reviews of the evidence-base for primary prevention public health initiatives relevanct to policing. 9,410 records were extracted of which 9,373 were screened by two researchers. 356 studies were assessed for eligibility of which 134 titles were included.

The majority of titles were academic publications (81%) across sixteen subject domains. The main domains reviewed were:violence (53%), substance misuse (37%) and mental health (27%). 42% of the titles were across multiple points of contact and 38% within school settings. Few primary prevention studies were delivered for domestic abuse, female genital mutilation, hate crime, road traffic accidents, terrorism and for white-collar crimes. Positive outcomes were ascribed to parenting, family-based, school and pre-school primary prevention interventions. Definitional problems identifying primary prevention initiatives from the literature were identified as a major concern. Thematic analysis identified issues linking causal mechanisms with behaviour change and how to ensure high-quality methods are deployed to measure outcomes. Further work is required to develop preventative approaches in areas with limited knowledge. It is recommended that research focus on expanding understanding causal mechanisms underpinning primary prevention initiatives.

Key Words:

Systematic Mapping, Primary Prevention, Prevention, Public Health, Policing.

1. Introduction

There has been an emerging consensus that emphasises the role of public health interventions in addressing wider societal needs including the prevention of anti-social and criminal behaviours encompassing diverse issues such as knife crime (Hurley, 2019; Ponsford et al. 2019), violence (Middleton and Sheppard, 2018), substance misuse (Saloner et al., 2018), domestic violence (Chandan et al., 2020) and suicidal behaviours (Decker et al., 2018). The role of public health initiatives to meet these wider needs has also been viewed conceptually as 'regulating the poor' (Rodger, 2012) or 'behavioural regulation' (Brown, 2015) as part of a wider aim of criminalising social policy (Rodger, 2008). This view can be seen as part of a debate as to whether the police should concentrate on a narrow, more 'traditional' focus for policing, set against examining the possible synergies that lie (and arguably can be shown to have always existed) between public safety and public health (Bartkowiak-Théron and Asquith, 2017; Herrington and Millie, 2014). The intersection of public health with policing and criminal justice has been considered an opportunity to develop an integrated approach that addresses antisocial behaviour with public health measures (Bartkowiak-Théron and Asquith, 2017). This allows police and public health bodies to prevent the onset of a social problem whilst also recognising and treating the antecedents of those issues (Van Dijk et al., 2019; 2017; Iacobucci, 2019; Shepherd and Sumner, 2017).

Public health approaches have established the need for a population-wide focus by an examination of determinants underpinning a social problem which allows for the targeting of preventative approaches(Christmas and Srivastava, 2019). A public health approach to prevention has been developed using a three-tier system, where 'primary' prevention prevents the onset of an issue or problem, 'secondary' prevention that intervenes at an early stage, and

'tertiary' prevention whereby an ongoing issue is managed to mitigate harmful consequences. Gordon (1983) offered an alternative taxonomy through 'universal' prevention that delivers an initiative through the whole population, 'selective' prevention that targets sub-populations with an elevated risk and 'indicated' prevention who have been defined as having an increased vulnerability for an issue based on an individualised assessment. In psychiatry, the Institute of Medicine (1994) further adapted Gordon's (1983) definition of 'indicated' prevention to include at-risk people who may not meet a diagnostic threshold for a problem but may have markers that point towards a future escalation of that issue. The incorporation of 'risk' as a concept also falls within police assessments of likely immediate and future need for police interventions that may incorporate public health and policing requirements (cf. Ariza et al., 2016; Maguire, 2000)

The primary prevention of a problem or issue is an emerging focus for police and partnerships in the UK (Christmas and Srivastava, 2019) although it has been recognised that police-related interventions aimed at primary prevention remain underdeveloped relative to secondary prevention initiatives (Bland et al., 2021). The scope of potential primary interventions that touch upon police activity is considerable and the evidence base is largely focused on either the evaluation of single initiatives or reviews within a specific subject domain. Domain diversity will be further compounded by the heterogeneity of populations being studied, methodologies and outcome measurements deployed. This may be a particular issue where the public health outcome may be an antecedent for future antisocial or criminal behaviour such as bullying in school, drug and alcohol use and non-acute mental health concerns such as depression or anxiety. For partners across public health and policing who are looking to invest in a robust primary prevention initiative, the sheer scope of potential interventions can be prohibitive. This study aimed to map the existing evidence-base for

primary prevention interventions that have relevance for policing. The study will build upon previous reviews by synthesizing the evidence base across different research designs, settings, geographical locations, and the type of intervention deployed. This approach differs from a systematic review that aims to search and appraise the evidence-base around a specific and often narrowly-defined area of research (Grant and Booth, 2009), The systematic mapping methodology further allowed for the identification of gaps in evidence and to develop priority areas for future primary or secondary research (Grant and Booth, 2009).

2. Methods

A review team was established as recommended by Clapton et al. (2009) including two researchers with backgrounds in police and public health supported by experts from the College of Policing and the Office for Health Improvement and Disparities (OHID). The scope of the mapping exercise was clarified following consultation with the review team to focus on recent existing reviews of the evidence rather than evaluations of single interventions. A key issue was defining when an intervention could be considered police related in cases such as bullying, substance misuse and mental health issues such as anxiety or depression where there may not be an immediate need for a police response. It was concluded that the inclusion of these topics was dependent on whether the prevention of offending, antisocial or harmful behaviours was explicitly stated within the aims of the study. For example, whether preventing bullying at schools was mentioned as an antecedent for future offending or harmful behaviours.

2.1 Inclusion and Exclusion Criteria

A search of titles was undertaken by librarians at the College of Policing and OHID. The inclusion criteria comprised systematic and non-systematic reviews of empirical studies published between 2015 and 2020 in the English language. Academic papers and grey literature (Paez, 2017) such as public body reports were included. Excluded were evaluations of individual interventions, study protocols and theoretical pieces that did not review the evidence-base. Three tiers of information were searched across public health, policing and methods (Table 1) using as many subject terms that could be potentially relevant taking into account differences in language used by public health and policing professionals (Salvador-Oliván et al., 2019). The search, data extraction and reporting methods were in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement (Page et al., 2021; Moher et al., 2009).

[Insert Table 1 about here]

2.2 Study Selection and Screening

Two levels of screening were undertaken as recommended by Khangura et al. (2012). Following the removal of duplicates, all publications were screened using inclusion/exclusion criteria formulated before screening by reviewing the title and abstract independently by two researchers. There was a 93% (Cohen's Kappa 0.23) concordance in the number of titles included for the full-text stage of the review, which was above the 80% level recommended by Abrami et al, 2010. Cohen's Kappa reliability estimate (Cohen, 1960) suggested only a fair degree of agreement between the two researchers. This was largely due to the absence of the term 'primary prevention' in many abstracts and issues at this stage in determining which studies were police relevant. Differences in inclusion or exclusion were in part a reflection of

the domain knowledge of two researchers and due to screening multiple subject topics. Considerable time was invested to ensure all discrepancies were reviewed by the two researchers and where issues were unresolved these were escalated to the review team as required. Full articles were obtained for any intervention that appeared to be a "best fit" to the study scope (Arksey and O'Malley, 2005: 15).

2.3 Data Extraction and Synthesis

The selected titles were uploaded into Covidence reference manager system (Covidence, 2021) with extracts exported into Microsoft Excel. A coding framework was established with the review team structured on a PICO (population, intervention, comparator, outcome) framework (Richardson et al., 1995). A pilot was undertaken with a sample of 200 titles as recommended by Tricco et al (2015). The coding allowed for a description of each title and a summary of the conclusions with sections based on EMMIE (effect, mechanism, moderator, implementation, economics) framework (Bowers et al., 2017; Johnson et al., 2015). A commentary on the outcomes and limitations derived from each study was also included in place of a quality assessment as recommended by Grant and Booth (2009).

The studies were synthesized by reviewing the contents of the EMMIE sections which in turn were mapped using graphical mapping techniques (Arksey and O'Malley, 2005) by linking emergent issues using Microsoft Visio. It should be noted that this approach can be viewed as subjective as publications varied in the language used to describe the effectiveness of an intervention. The researchers, therefore, took a consensus view on the likely direction of an outcome between 'positive', 'negative' and 'neutral'. The results are presented using the number of titles as the denominator rather than the total number of discrete interventions (for

example, when there is a review of more than one intervention or domain). This was supplemented by a commentary provided by each researcher on the implications of the findings from each title. The summary results were analysed using Stata v15 (StataCorp, 2005). The adjunctive commentaries on each title were created by visually mapping the commentary relating to each title to create explanatory themes.

3. Results

3.1 Study Selection

9,410 titles were imported into Covidence for preliminary screening, of which 35 were identified as duplicates using an automated function. 9,373 publications were screened by title and abstract for eligibility. 356 studies were included for a full-text screen resulting in a final list of 134 studies describing 244 separate interventions (Figure 1).

[Insert Figure 1 about here]

3.2 Study Characteristics

The number of published studies each year was between 21 and 23 apart from 2017 with 27 reported publications. Most titles were academic publications (81%, n=109) with the remainder public body reports (9%, n=12) or other 'grey' literature (5%, n=6); a Cochrane Review (3%, n=4); book or book chapter (2%, n=3). Over two-thirds (68%, n=91) of titles were within public health publications; and an additional 10% (n=14) included publications that had an integrated public health and criminal justice focus. 11% (n=15) of titles were from

'other' domains (such as education) and 10% (n=14) of titles were from criminal justice publications.

As shown in Table 2, 44% (n=59) of titles were a systematic review, and 26% (n=19) were a non-systematic literature review followed by several discursive pieces that differed from a traditional literature review by being primarily focused on policy appraisal (16%, n=21). In addition, 13% (n=37) of studies incorporated a meta-analysis and 28% (n=37) included an economic analysis. The mapping exercise found problems in discerning the exact geographical location of the interventions being studied. Where a location was stated, some were vaguely described such as "high" or "low-income counties"; "Europe"; "North America". Less than one-fifth (19%, n=26) of titles assessed primary prevention interventions only, with the remainder combining primary with secondary and tertiary interventions.

[Insert Table 2 about here]

Sixteen domain areas (Table 3) were identified. These areas were disaggregated to demarcate substance misuse (drugs, alcohol and in combination), mental health (by levels of severity) and violence prevention ('general', 'gang' and 'youth'). The wide domain diversity can be demonstrated in the main topics that were reviewed. As a percentage of the 134 titles over half (53%) of all titles reviewed involved the prevention of violence of any type, over one-third of titles (37%) examined substance misuse interventions (drugs and alcohol, separately or in combination) and over one-quarter (27%, n=36) assessed mental health interventions. Intimate Partner Violence (20%, n=27) and Child Maltreatment (19%, n=26) comprised around one-fifth of all titles.

[Insert Table 3 about here]

The sites in which primary interventions were delivered were divided mainly into a small number of settings. 42 per cent of published titles (n=56) reviewed multi-component interventions across several disparate channels with 38% of titles (n=51) focused on school-based populations. A smaller number of titles utilised focused on legislative mechanisms (15%); 13% (n=17) of titles were explicitly aimed at a community level (where the title used "community" as a defining characteristic); 8% (n=11) of interventions were specifically targeting environmental design with 8% (n=10) of interventions primarily focused on the whole family.

Although the majority (86%) of the titles reviewed provided an explicit commentary on outcomes, it was often difficult to gauge authors' overall conclusions on the intervention as the language used to describe outcomes varied. For example, the use of terms such as "promising" or "emerging" may overstate an outcome. This was also true for titles that focused on "what works" interventions that may omit other approaches from the appraisal. The discussion of outcomes was often incorporated into a single overarching judgement such that it was difficult to discern a specific effect for primary prevention interventions where multiple intervention types had been reviewed. Consequently, although we attempted to systematise our approach to capture the direction of an outcome, this is likely to be subjective and reliant on the authors' tone. Therefore, we advise caution in the interpretation of outcomes.

Table 4 describes the direction of outcomes by intervention type. Of those titles that assessed the outcomes over more than one review, parenting (100%, n=16) and family-based primary interventions (90%, n=10) were more likely to report positive outcomes. Three-quarters or more of school (77%, n=4) or pre-school interventions (75%, n=4) were described as reporting a positive outcome. Six intervention types across curfews, economic support, elder abuse, road traffic injuries, workplace interventions and youth work were all reported not to have an overall clear positive outcome although there may be components within the intervention that report some positive change.

3.3 Study Themes

Two broad themes emerged from a thematic analysis of the coded dataset. The first theme related to a discussion on the mechanisms that underpinned behavioural change and in particular the perceived need to provide quantitative assessments of behaviour change. As most studies that reviewed the original papers focused on methods aggregating the outcomes, broad descriptions of the intervention(s) were provided, with limited discussion of the need to understand the 'black box' that drove behavioural change (for example, to understand the interaction between implementation and organisational factors with outcomes). . This may be considered a gap in our knowledge as the heterogeneity in initiatives would likely have multiple mechanisms that underpin change. Also, a number of the titles reviewed raised concerns over the transferability of interventions to lower-or middle-income countries alongside the need to culturally adapt approaches across nations and communities with differing socio-economic attributes.

The second theme reflected limitations in the methods deployed in the original studies that were being reviewed. Multiple methods used in the original evaluations included a lack of randomisation and limited use of alternative quasi-experimental methods to test causality, compounded by variations in how the data were originally reported limited researchers' ability to pool effects. Furthermore, the diversity in timescales in which to attribute an outcome, measures to quantify change including the use of indirect metrics used as proxy measures for reduced offending or risk of harm, were also perceived as problematic, especially for highly complex, heterogeneous interventions.

4. Discussion

The study aimed to construct a map of existing reviews of the literature relating to the use of interventions that focus on primary prevention that apply to policing in preventing offending, antisocial, and harmful behaviours. This study goes beyond previous research with a narrower remit to examine any primary prevention initiative within a policing context. The mapping exercise highlighted the volume and breadth of the topic with 134 titles published between 2015 and 2020. Most titles mapped were academic publications across 16 subject domains (21 if mental health, substance misuse and mental health elements are disaggregated). Violence, substance misuse and mental health were the main subject domains reviewed with only a small number of studies aimed at female genital mutilation, domestic abuse, hate crime, road traffic accidents and terrorism. We suggest that these areas are gaps in knowledge relating to primary prevention interventions in these domains and tthese domains remain focused on crimes that are attributed to marginalised groups only with a dearth of interventions that examine 'white-collar' crime (Rothe and Kauzlarich, 2016). We argue that there is a need to expand work in public health preventative approaches in this area.

Furthermore, the complexity of interventions was highlighted in the large number of interventions delivered in multiple settings rather than a single, static site. A comparatively large number of school-based interventions were noted reflecting a historic preference for studies in this setting. Parenting, family-based, school and pre-school interventions were shown to have the highest levels of positive outcomes ascribed to them, although we are cautious in this finding as titles varied in their use of language and descriptions of the outcomes. We suggest that the mapping of outcomes is somewhat subjective and dependent on the reviewed authors' perspectives and preferences.

The main issue for this mapping exercise was concerning definitions. For the research team, there was some debate over what was considered appropriate for a police context, and a title was only included if there was an explicitly stated aim of addressing offending or risk of future offending. Where discrepancies between the researchers existed, these were escalated to the oversight panel of experts from the College of Policing and OHID for adjudication. Also, under one fifth (19%) of titles assessed primary prevention approaches only and therefore were often integrated with secondary and tertiary interventions. This highlights the complexity of many preventative initiatives that transcend a simple primary-secondary-tertiary classification. This limited the ability of the research team to provide detail on the interventions and also to assign a likely outcome of the primary prevention component of the intervention. This was compounded by the relatively few studies that utilised the term 'primary prevention', preferring alternative definitions and often deploying a catch-all 'prevention' term to cover multiple preventative approaches. The issue of providing accurate definitions for preventative interventions has been a source of continued discussion (Foxcroft, 2014) which has led to some operational confusion (Storer et al., 2016). It should be noted

that the use of primary-secondary-tertiary definitions was only provided in a subset of papers, with other studies utilising ‘universal-targeted-indicated’ definitions. The mapping exercise suggested that the categories did not always transpose directly across to each other creating issues in classifying an intervention. This is a major finding and limits our ability to draw firm conclusions from the evidence.

Finally, our analysis of themes suggested broad concern over the diversity and quality of original studies being reviewed. This issue was compounded by the heterogeneity of subject matter with wide variations even within a single topic area. The statistical methods and outcomes metrics deployed were noted to vary considerably across studies making comparisons difficult. Furthermore, our mapping of the studies raised concerns over how far reviews have been able to delineate the mechanisms that underpin behaviour change across multiple domains. There may be a need for caution in making any sweeping conclusions about the efficacy of an intervention in the light of these caveats.

4.1 Strengths and Limitations

This study is one of a small number examining primary health-based prevention interventions and their applicability to policing. A strength of this study was the breadth of study to encompass any public health initiative that may have relevance for policing. The contrary may also be true, that the breadth of the analysis may obscure the effectiveness of more focused interventions within a subject domain. The systematic mapping methodology deployed a comprehensive search strategy that utilised two researchers with public health and policing backgrounds to screen and review the titles. Although there was high concordance in the agreement on which titles to include, the was some variation in the screening process.

This approach identified potential domain biases and the researchers invested considerable resources in examining the reasons for the inclusion and exclusion of specific studies. Due to the nature of the systematic mapping exercise (Grant and Booth, 2009) and the volume of titles reviewed, a formal bias assessment of titles was not taken although it is suggested that this should be considered for future cross-disciplinary reviews. Furthermore, although few preventative studies were found for 'white-collar crime' such as fraud, gambling, or tax evasion, this may be considered a limitation on the original selection of search terms. Future work should consider the extent to which the findings can be generalised to these other forms of criminal behaviours.

5. Conclusion

The findings from this systematic mapping exercise were limited by definitional constraints in the titles we reviewed. The heterogeneity of the subject matter and the lack of a consistent definition of prevention hindered our ability to draw firm conclusions, and we recommend that researchers and policymakers reframe prevention to focus less on definitions but rather emphasize evaluating the concepts and mechanisms that underpin behaviour change driven by high-quality research methods. There is a need to further our knowledge base on the transferability of initiatives to areas that have not been hitherto subject to preventative approaches.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The study was funded by the College of Policing, United Kingdom.

References

Abrami, P. C., Borokhovski, E., Bernard, R. M., Wade, C. A., Tamim, R., Persson, T., ... & Surkes, M. A. (2010). Issues in conducting and disseminating brief reviews of evidence. Evidence & policy: a journal of research, debate and practice, 6(3), 371-389.

Jose Medina Ariza, J., Robinson, A., and Myhill, A. (2016). Cheaper, faster, better: Expectations and achievements in police risk assessment of domestic abuse. Policing: a journal of policy and practice, 10(4), 341-350.

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. International journal of social research methodology, 8(1), 19-32.

Bartkowiak-Théron, I., & Asquith, N. L. (2017). Conceptual divides and practice synergies in law enforcement and public health: Some lessons from policing vulnerability in Australia. Policing and society, 27(3), 276-288.

Bland, N., Calder, A., Fyfe, N. R., Anderson, S., Mitchell, J., and Reid, S. (2021). Public Policy Reform and Police Prevention Practice: A Journey Upstream?. Policing: A Journal of Policy and Practice.

Bowers, K., Tompson, L., Sidebottom, A., Bullock, K., and Johnson, S. D. (2017). Reviewing evidence for evidence-based policing. Advances in evidence based policing. London: Routledge, 98-116.

Brown, K. (2015). Vulnerability and young people: Care and social control in policy and practice. Policy Press.

Christmas, H., and Srivastava, J. (2019). Public health approaches in policing. London: Public Health England; College of Policing.

Chandan, J. S., Taylor, J., Bradbury-Jones, C., Nirantharakumar, K., Kane, E., and Bandyopadhyay, S. (2020). COVID-19: a public health approach to manage domestic violence is needed. The Lancet Public Health, 5(6), e309.

Christmas, H., and Srivastava, J. (2019). Public health approaches in policing. London: Public Health England, College of Policing.

Clapton, J., Rutter, D., and Sharif, N. (2010). Systematic Mapping Guidance. Social Care Institute for Excellence.

Cohen, J. (1960). A coefficient of agreement for nominal scales. Educational and psychological measurement, 20(1), 37-46.

Covidence systematic review software (2021), Veritas Health Innovation, Melbourne, Australia. www.covidence.org.

Decker, M. R., Wilcox, H. C., Holliday, C. N., and Webster, D. W. (2018). An integrated public health approach to interpersonal violence and suicide prevention and response. Public Health Reports, 133(1_suppl), 65S-79S.

Foxcroft, D. R. (2014). Can prevention classification be improved by considering the function of prevention?. Prevention Science, 15(6), 818-822.

Gordon Jr, R. S. (1983). An operational classification of disease prevention. Public health reports, 98(2), 107.

Grant, M. J., and Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. Health information and libraries journal, 26(2), 91-108.

Herrington, V., & Millie, A. (2014). How wide or narrow should the police's remit be. In Law Enforcement and Public Health Conference, Amsterdam, Netherlands.

Hurley, R. (2019). BMA calls for knife crime to be tackled as a public health concern. BMJ 2019;365:l4424

Iacobucci, G. (2019). Merseyside launches public health approach to tackle rising violent crime. BMJ 2019;365:l2253

Institute of Medicine. (1994). Reducing the risks for mental disorders: frontiers for preventive intervention research. In P. J. Mrazek and R. J. Haggerty (Eds.), Committee on Prevention of Mental Disorders, Division of Biobehavioral Sciences and Mental Disorders. Washington, DC: National Academy Press.

Johnson, S. D., Tilley, N., & Bowers, K. J. (2015). Introducing EMMIE: an evidence rating scale to encourage mixed-method crime prevention synthesis reviews. Journal of Experimental Criminology, 11(3), 459-473.

Khangura, S., Konnyu, K., Cushman, R., Grimshaw, J., & Moher, D. (2012). Evidence summaries: the evolution of a rapid review approach. Systematic reviews, 1(1), 1-9.

Maguire, M. (2000). Policing by risks and targets: Some dimensions and implications of intelligence-led crime control. Policing and Society: An International Journal, 9(4), 315-336.

Middleton, J., and Shepherd, J. (2018). Preventing violent crime.BMJ 2018;361:k1967 doi: 10.1136/bmj.k1967 (Published 8 May 2018).

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., and Prisma Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS medicine, 6(7), e1000097.

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. International Journal of Surgery, 88, 105906.

Paez, A. (2017). Gray literature: An important resource in systematic reviews. Journal of Evidence-Based Medicine, 10(3), 233-240.

Ponsford, R., Thompson, C., and Paparini, S. (2019). We need a renewed focus on primary prevention to tackle youth knife violence. British Medical Journal, 365.

Richardson, W. S., Wilson, M. C., Nishikawa, J., & Hayward, R. S. (1995). The well-built clinical question: a key to evidence-based decisions. Acp j club, 123(3), A12-A13.

Rodger, J. (2012). Criminalising social policy: Anti-social behaviour and welfare in a de-civilised society. Willan.

Rodger J. (2008), Criminalising Social Policy: Anti-social Behaviour and Welfare in a De-civilised Society, Cullompton: Willan Publishing.

Rothe, D., & Kauzlarich, D. (2016). Crimes of the powerful: An introduction. Routledge.

Saloner, B., McGinty, E. E., Beletsky, L., Bluthenthal, R., Beyrer, C., Botticelli, M., and Sherman, S. G. (2018). A public health strategy for the opioid crisis. Public Health Reports, 133(1_suppl), 24S-34S.

Salvador-Oliván, J. A., Marco-Cuenca, G., and Arquero-Avilés, R. (2019). Errors in search strategies used in systematic reviews and their effects on information retrieval. Journal of the Medical Library Association: JMLA, 107(2), 210.

Shepherd, J. P., and Sumner, S. A. (2017). Policing and public health—strategies for collaboration. Jama, 317(15), 1525-1526.

StataCorp, L. P. (2005). Stata base reference manual. College Station: StataCorp LLC.

Storer, H. L., Casey, E. A., Carlson, J., Edleson, J. L., and Tolman, R. M. (2016). Primary prevention is? A global perspective on how organizations engaging men in preventing gender-based violence conceptualize and operationalize their work. Violence against women, 22(2), 249-268.

Tricco, A. C., Antony, J., Zarin, W., Strifler, L., Ghassemi, M., Ivory, J., ... & Straus, S. E. (2015). A scoping review of rapid review methods. BMC medicine, 13(1), 1-15.

Van Dijk, A. J., Herrington, V., Crofts, N., Breunig, R., Burris, S., Sullivan, H., ... and Thomson, N. (2019). Law enforcement and public health: recognition and enhancement of joined-up solutions. The Lancet, 393(10168), 287-294.

Van Dijk, A., and Crofts, N. (2017). Law enforcement and public health as an emerging field. Policing and society, 27(3), 261-275.

Table 1: Search Terms

Tier 1 – Public health	Tier 2 – Policing	Tier 3 – Methods
• Public health • Epidemiolog* • Primary OR long term OR secondary OR tertiary prevent* • Early intervention OR action OR years • Adverse childhood experience OR ACE • Social determinant • Protective factor • Population OR community AND health • Health AND improvement* OR *equalit* OR education OR promotion OR literacy OR protection	• Police • Policing • Law AND enforc* • Crime • Criminal • Offence • Victim • *Offend* • Perpetrat* • Delinquen* • Felony • Misdemeanor • Custody • Court • Prison • Jail • Detention • Divert • Diversion • Deflect* • Violen* • Assault • Weapon • Knife • Knives • Gun • Homicide • Murder • Disorder • Anti-social behavio*r • ASB • Sex* AND abuse OR exploit* • Drug OR substance OR alcohol AND *use* • Narcotics • Addict*	• Balanced review filter OR • Systematic AND search OR map OR review • Meta analys*s • Scoping review • Rapid evidence AND review OR assessment

	• Mental health AND crisis OR distress • Vulnerable OR at risk AND adult OR person OR people OR child* • Safeguard	

Figure 1: PRISMA Flow Diagram

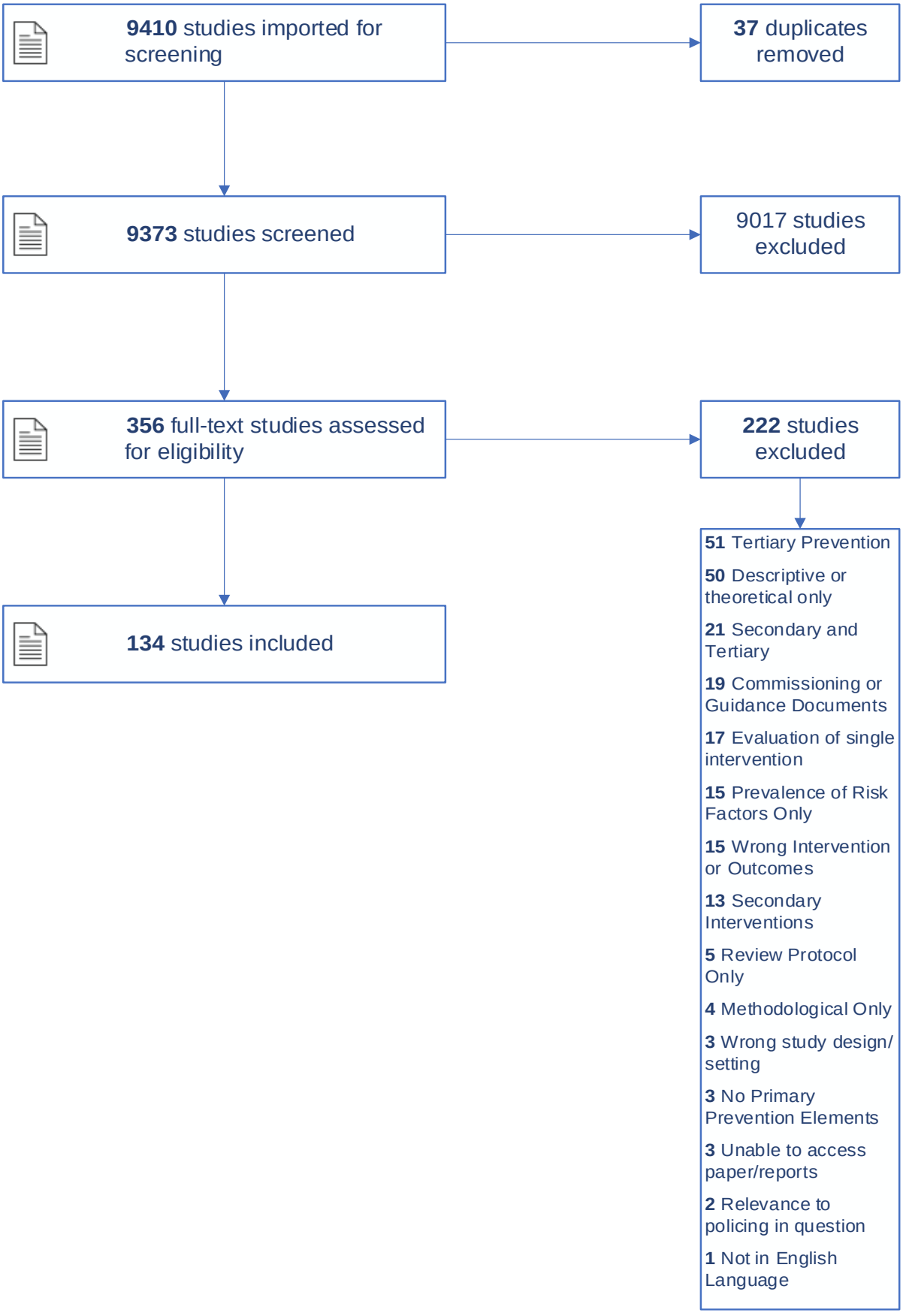

Table 2: Method deployed

Method*	**Number**	**Percentage**
Systematic Review	59	44%
Literature Review (Non-Systematic)	26	19%
Discursive/commentary	21	16%
Rapid Evidence Assessment/Review	9	7%
Review of Reviews	8	6%
Systematic Map	6	5%
Qualitative Evidence Assessment	5	4%
Cochrane Review	4	3%
Evidence Synthesis	1	1%
Integrative Review	1	1%

(*the total will add up to more than the number of titles as more than one method can be deployed.)

Table 3: Subject Domain by Title (calculated as a percentage of 134 titles)

Subject Domain*	**Number**	**Percentage**
Adverse Childhood Experiences	4	3%
Alcohol	18	13%
Bullying including cyber bullying	9	7%
Child Maltreatment or Abuse	27	20%
Child Sexual Exploitation	8	6%
Crime (General)	7	5%
Domestic Abuse	3	2%
Drugs (including County Lines)	10	7%
Elder Abuse	7	5%
FGM	1	1%
Firearms	11	8%
Hate Crime	2	1%
Intimate Partner Violence (including dating violence)	26	19%
Mental Health (low-level antecedents)	15	11%
Mental Health Suicide and Self Harm prevention	23	17%
Road Traffic Injuries	1	1%
Substance Misuse	22	16%
Terrorism	2	1%
Violence (gangs)	2	1%
Violence (general incl. aggression)	42	31%
Violence (youth)	27	20%

(*the total will add up to more than the number of titles as more than one subject domain can be reviewed by a title.)

Table 4: Number of titles with a positive outcome direction by intervention type

Intervention	**Number**	**Percentage**
Empowerment	1	100%
Parenting	16	100%
Family	10	90%
School	44	77%
Pre-School	4	75%
Digital	3	67%
Community	27	63%
Interventions across multiple channels	45	58%
College	4	50%
Digital Technology	4	50%
Firearms	4	50%
Use of legislation	20	50%
Male-Focused Programmes	2	50%
Mentoring	2	50%
Environment	9	44%
Mass Media	5	40%
Participation in education, employment and training	3	33%
Curfew	1	0%
Economic initiatives	2	0%
Elder Abuse	3	0%
Road Traffic Injuries	0	0%
Workplace	1	0%
Youth Work	4	0%