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REVIEW

Stressful childhood experiences and health outcomes in sexual minority populations: a systematic review

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Abstract
Purpose Stressful childhood experiences (SCE) are associated with many different health outcomes, such as psychiatric symptoms, physical illnesses, alcohol and drug abuse, and victimization experiences. Lesbian, gay, bisexual, and transgender (LGBT) people are at risk to be victims of SCE and show higher prevalence of SCE when compared with heterosexual controls.
Methods This review analyzed systematically 73 articles that addressed different types of SCE in sexual minority populations and included items of household dysfunction. The samples included adults who identified either their sexual orientation as non-heterosexual or their gender identity as transgender.
Results The studies reported childhood sexual abuse (CSA), childhood physical abuse (CPA), childhood emotional abuse (CEA), childhood physical neglect, and childhood emotional neglect. Items of household dysfunction were substance abuse of caregiver, parental separation, family history of mental illness, incarceration of caregiver, and witnessing violence. Prevalence of CSA showed a median of 33.5 % for studies using non-probability sampling and 20.7 % for those with probability sampling, the rates for CPA were 23.5 % (non-probability sampling) and 28.7 % (probability sampling). For CEA, the rates were 48.5 %, non-probability sampling, and 47.5 %, probability sampling. Outcomes related to SCE in LGBT populations included psychiatric symptoms, substance abuse, revictimization, dysfunctional behavioral adjustments, and others.
Conclusions LGBT populations showed high prevalence of SCE. Outcomes related to SCE ranged from psychiatric symptoms and disorders to physical ailments. Most studies were based in the USA. Future research should aim to target culturally different LGBT population in the rest of the world.

Keywords LGBT · Gay · Lesbian · Transgender · Homosexual · Childhood abuse

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Introduction

Stressful childhood experiences (SCE) have gained more attention over the last years. In a landmark study, Felitti et al. [1] analyzed the prevalence of adverse childhood experiences (ACE) in large Health Maintenance Organization (HMO) samples [$n = 9{,}508$; ACE study]. The authors focused on adverse experiences such as childhood sexual abuse, physical abuse and psychological abuse, physical and emotional neglect. Additionally, they introduced the concept of household dysfunction including substance abuse and mental illness of the caregiver, violent treatment of mother or stepmother, separation from

caregiver, and criminal behavior in the family. Rates, in this large HMO sample in California, ranged from 3.4 % (criminal behavior in the household) to 25.6 % (substance abuse in the household). In addition, they showed that exposure to any ACE increased the risk of being exposed to any additional experience by up to 80 % and the probability of more than two additional exposures by up to 54.5 % [1, 2]. Other groups have replicated the results found in the ACE study; O'Connor et al. [3] showed that these ACE were connected, with taking place in clusters, and not isolated experiences. The ACE study group also analyzed health risk factors and disease conditions showing a strong dose–response relationship between ACE and these outcomes [1]. In community samples as well as psychiatric populations, increasing events of ACE correlated with higher prevalence of current smoking [4], severe obesity [5], increased head injuries, and medical emergency room visits [6]. Additional studies connected health conditions, such as ischemic heart disease [5], cancer [7], stroke, emphysema, diabetes [8], skeletal fractures, and hepatitis [9] with abusive experiences during childhood. Moreover, problems with alcohol [10] and illicit drug use [9], as well as promiscuity and history of sexually transmitted diseases [11], were shown to be related to SCE. Furthermore, SCE were strongly associated with mental health issues. Other studies showed associations with affective disorders [12, 13], anxiety, and panic symptoms [12], suicide attempts [13], and psychotic symptoms [14–16].

The literature about victimization experiences in lesbian, gay, bisexual, and transgender (LGBT) people has been a more recent focus of research. An early comprehensive study on lesbians showed that 37 % had been physically abused as a child or adult, 32 % had been raped or sexually attacked, and 19 % had been involved in incestuous relationships while growing up [17]. Another study suggested that LGBT people had a higher prevalence of rape below the age of 18 than their heterosexual counterpart [18]. Doll et al. [19] reported high rates of childhood sexual abuse (CSA) in both, bisexual and homosexual men attending sexually transmitted disease clinics. Similarly, Tomeo et al. [20] demonstrated increased rates of CSA in a homosexual people, when compared to heterosexual people. A US population-based survey reported higher rates of parental maltreatment during childhood for homosexual and bisexual men and women than for heterosexual adults [21]. Also, several studies analyzing lesbian populations found high rates of childhood and adulthood sexual and physical abuse [22, 23]. A systematic review focusing mainly on sexual assault (childhood sexual assault, lifetime sexual assault, intimate partner sexual assault, and adult sexual assault) showed a 22.7 % median prevalence for childhood sexual assault in men and a median of 34.5 % for women in adult sexual minority populations [24]. In high-risk youth, high rates of SCE were found [25]. A meta-analysis also showed high rates of abuse experiences in sexual minority youths [26]. Transgender people in particular were at high risk for being victims of violence. Stereotypes and negative depiction in media and society led to hate crimes and so-called trans bashing (aggression against transgender people), which put this population at stake for victimization [27]. LGBT populations were also at high risk for diverse health conditions, such as sleep disturbances, anxiety and depressive symptoms, gastrointestinal and chronic rheumatic diseases [28]. They were also found to be susceptible for health disparities based on discrimination, family disapproval, social rejection, and violence [26, 29].

The objective of this systematic review was to gather the growing information on rates of SCE in LGBT populations. The analysis included rates of childhood sexual abuse (CSA), childhood physical abuse (CPA), childhood emotional abuse (CEA), childhood physical neglect (CPN), and childhood emotional neglect (CEA). In addition, the review focused on items of household dysfunction such as drug abuse and alcohol abuse in the household, witnessing of physical and sexual violence, as well as arrest histories within the family. Health outcomes related to these severe childhood experiences were analyzed. For the purpose of this review, we defined the individual abuse experiences according to the Histories of Physical and Sexual Abuse Questionnaire [30] and the items of household dysfunction according to the ACE questionnaire [1].

Method

Search strategy

This systematic review was structured following the guidelines and checklist proposed by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement [31, 32]. The review was registered at the international prospective register of systematic reviews (PROSPERO), registration number CRD42014007034 [33].

The literature search was based on search engines including MEDLINE (Ovid), PubMed, Web of Science, Google Scholar, and PsycNet (includes PsycINFO, PsycBOOKS, PsycARTICLES, PsycTESTS), between 01/01/1990 and 12/31/2013. The advanced searches for the category sexual orientation or gender identity included the search terms *lesbian, gay, bisexual, transgender, transsexual, homosexual, men who have sex with men*

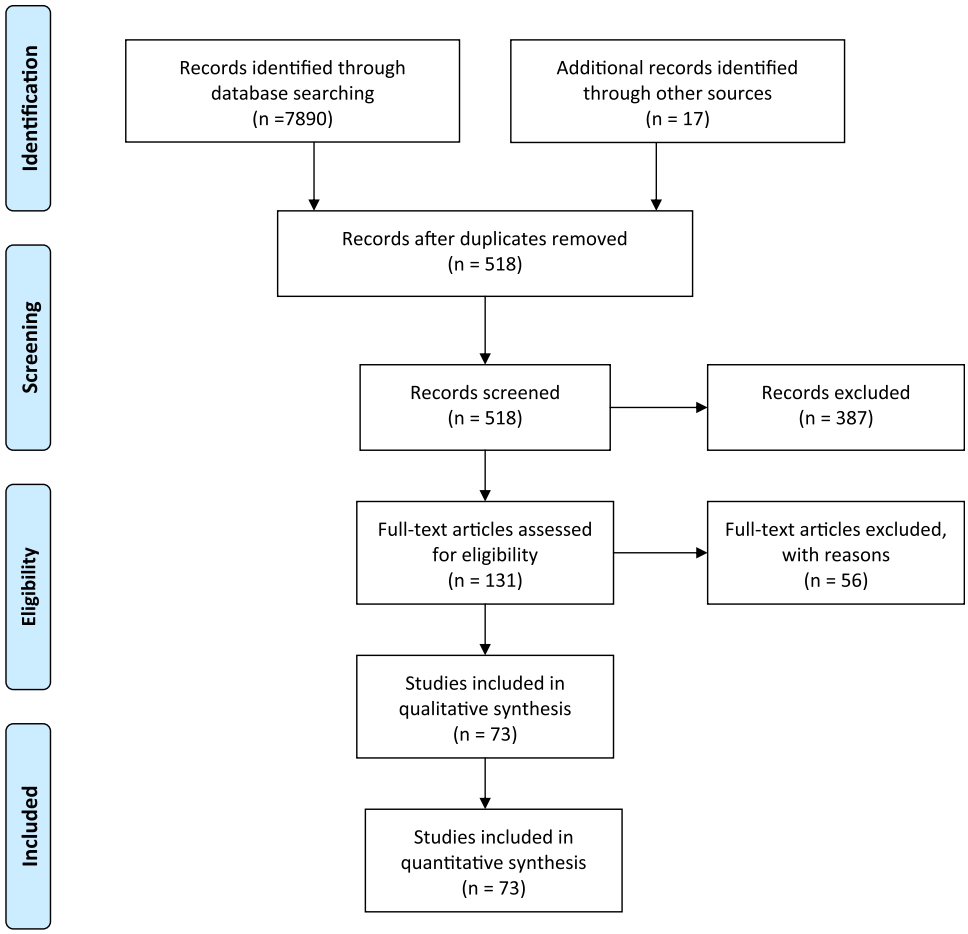

Fig. 1 PRISMA 2009 flow diagram

and for the category of stressful childhood experiences the terms *childhood abuse, childhood sexual abuse, childhood physical abuse, childhood emotional abuse, childhood physical neglect, childhood emotional neglect, household dysfunction, and witnessing*.

The accepted languages were English, German, French, Italian, and Spanish. Data were included that had been published in peer-reviewed journals, presented at conferences, as poster presentations or, if non-published, the data were provided from the researchers directly. We also reviewed reference lists of important key publications to incorporate the identified studies in our review. In order to avoid missing data due to publication bias, such as the file drawer effect [34], we contacted the corresponding authors of the enclosed publications via email, requesting access to possible unpublished data, data presented in conferences or on poster presentations. Out of the 58 contacted authors, 26 responded adding 17 more articles to the initial records, as well as unpublished data or confirming that they do not possess any additional published or unpublished data.

Screening and selection procedure

The searches were performed independently by two of the authors (Andres R. Schneeberger, Michael F. Dietl). The flow diagram depicted in Fig. 1 shows the process of study selection. The first step after the search included scanning for duplicates based on the summary information (authors, title, and journal). After the duplicates had been removed, the abstracts were screened for the following inclusion criteria: (a) adult samples (18 years and older); (b) participants identified their sexual orientation as non-heterosexual or their gender identity as transsexual, transgender or non-male, non-female; (c) analysis of severe childhood experiences before the age of 18. Qualitative studies were accounted for if they included a quantitative analysis of the SCE. If the inclusion criteria could not be assessed from the abstract, the entire article was reviewed. The next step included full-text assessment of the remaining articles for the following exclusion criteria: (1) the article had to have the approval of an internal review board or an ethics committee; (2) the adverse experience had to occur before

the age of 18; (3) if prevalence was not presented or data did not allow for computation of these rates, and the authors could not be contacted for the raw data, the article was excluded.

Data extraction

The initial results of the database searches were exported into word files and screened using search functions. Prevalence was calculated if necessary to present them in a uniform fashion by determining the mean where possible. In order to get the prevalence for males, females, and total participants, these rates were calculated using the rule of proportion. If present, outcome variables were noted and grouped into five categories: psychiatric symptoms, substance abuse, dysfunctional behavioral adjustments, revictimization, and others. All studies except six analyzed at least one outcome variable related to SCE.

Results

The list of all analyzed articles is presented in Table 1. The total sample size, including sexual minority and majority individuals, is reported as well as the subsample of the LGBT target populations analyzed in this review. The data from Hequembourg et al. [35] were obtained from the abstract of a poster presentation. Two research groups provided us with additional unpublished data in order to calculate the prevalence [25, 36]. Twelve studies focused on lesbian subjects only; one study targeted homosexual women and one included a category called mostly heterosexual women; eight studies include lesbian and bisexual women in their analysis; eleven studies focused on MSM; eleven manuscripts targeted gay and bisexual males; transgender subjects were included in three studies, all of which analyze MTF but only one included FTM individuals. The rest focused mainly on compound populations of lesbian, gay, MSM, and bisexual individuals. Only one study [37] fulfilled the criteria of a prospective study, including a baseline assessment and reassessment at future measuring points. Out of all the studies, 22 had a higher external validity as they analyzed entire populations and not only convenience samples. One qualitative study was included because SCE was analyzed in a quantitative fashion [38]. Thirty-seven studies used paper questionnaires, while 23 chose a face-to-face interview to gather the information. Eight studies used a phone interview and the rest relied on online questionnaire, computer interview, or mixed forms of interviewing. Sixty-four out of 73 analyzed studies were based in the United States of America and Puerto Rico, while three were European-based, two from Germany [39, 40], and one from Italy [41]. In addition, two studies originated from Canada [42, 43], one from China [44], one from Turkey [36], one from Brazil [45], and one from Australia [46]. LGBT population sample sizes ranged from 12 to 4,295 participants with a median of 446 analyzed sexual minority subjects. Seventy studies (95.9 %) analyzed CSA; however, only 33 (45.2 %) focused on CPA and 11 (15.1 %) on CEA. Experiences of CEN and CPN were studied in three cases. Household dysfunction items were included five times.

The definitions used for CSA varied throughout the studies and ranged from questions about having had a sexual experience that felt abusive to specific questions addressing sexual touching, oral sex, and penetration. The age cutoff ranged from ages 14 to 18. The studies also used different definitions for CPA, extending from slapping to using an object that hurt or burned the victim to the point that medical care was needed. CEA variables were defined as psychological abuse including humiliation, belittling but also threatening behavior. Neglect variables such as CPN and CEN addressed the lack of care provided by the responsible parent or caregiver, this included not providing adequate food and shelter or psychological and emotional support.

Several possible biases at the level of individual studies were identified. Some of the studies used probability samples while others did not. In addition, different populations were analyzed including clinical and general populations, as well as specialized subgroups, such as HIV risk populations [47–55], call boys [56], and different ethnic groups (Afro-American [38, 57], Native-American [58], Latino [59–62], etc.). Most studies had a retrospective design; the information regarding ACE were based on the participants' recall. In order to address possible biases, the studies were stratified by probability versus non-probability samples. The median prevalence for total CSA was 20.7 % for probability studies and 33.5 % for non-probability studies. This difference in CSA according to sampling type had been described previously [24]. CPA showed the following median prevalence: 28.7 % for probability and 23.5 % for non-probability samples. CEA prevalence accounted with 47.5 % for probability and 48.5 % non-probability samples. Regarding the interviewing method, the studies using questionnaires presented a median prevalence for CSA of 26.6 versus 31.1 % for the rest of the interviewing strategies. CPA rates in the questionnaire group reached a median of 24.0 versus 26.9 % for all other interviewing methods. CEA rates showed no significant difference between questionnaires (48.7 %) and other interviewing methods (43.7 %). The median value for CEA in the questionnaire group was 48.7 % while the remaining studies had a median prevalence of 43.7 %.

Table 1 Severe childhood experiences in non-heterosexual populations

First authors (Year)	Total	LGBT	Population	Control	Location	Interviewing	Sampling	Types of SCE
Aaron and Hughes [97]	416	416	lesbian	no	USA	questionnaire	non-probability	CSA
Alvy et al. [64]	953	429	lesbian and bisexual women	yes	USA	face-to-face interview	non-probability	CSA, CPA, CPN
Andersen and Blosnich [67]	22,071	463	lesbian, gay, bisexual	yes	USA	phone interview	probability	CSA, CPA, CEA, WTG, PSD, HDA, IHM, HMI
Arreola et al. [59]	2,881	2,692	MSM	no	USA	phone interview	probability	CSA
Arreola et al. [61]	912	912	gay and bisexual men	no	USA	face-to-face interview	probability	CSA
Austin et al. [89]	63,028	717	lesbian and bisexual women	yes	USA	questionnaire	probability	CSA, CPA
Austin et al. [99]	391	33	mostly heterosexual women	yes	USA	questionnaire/ phone	probability	CSA
Balsam et al. [58]	179	25	two spirits	yes	USA	questionnaire	non-probability	CSA, CPA
Balsam et al. [90]	1,245	720	lesbian, gay, bisexual	yes	USA	questionnaire	non-probability	CSA, CPA, CEA
Balsam et al. [71]	669	669	lesbian, gay, bisexual, queer	no	USA	online questionnaire	non-probability	CSA, CPA, CEA
Balsam et al. [112]	1245	536	lesbian, gay	yes	USA	questionnaire	non-probability	CSA
Bandini et al. [41]	162	109	MTF	no	Italy	face-to-face interview	non-probability	CSA, CPA, CEA
Bartholow et al. [47]	1,001	1,001	MSM, gay and bisexual men	no	USA	face-to-face interview	non-probability	CSA
Benoit and Downing [57]	33	33	MSM	no	USA	face-to-face interview	non-probability	CSA
Bradford et al. [17]	1,925	1,925	lesbian	no	USA	questionnaire	non-probability	CSA, CPA
Brennan et al. [48]	936	853	gay and bisexual men	no	USA	questionnaire	probability	CSA
Carballo-Dieguez and Dolezal [49]	182	182	MSM	no	USA	questionnaire	probability	CSA
Carballo-Dieguez et al. [45]	658	575	MSM, MTF	no	Brazil	face-to-face interview	non-probability	CSA
Catania et al. [85]	1,078	762	MSM	no	USA	questionnaire	probability	CSA
Chen et al. [44]	2,250	714	MSM	no	China	questionnaire	non-probability	CSA
Corliss et al. [21]	3,032	73	homosexual, bisexual men and women	yes	USA	questionnaire	probability	CPA, CEA
Corliss et al. [70]	2,001	2,001	lesbian and bisexual women	no	USA	questionnaire	non-probability	CSA, CPA, CEA
Dolezal et al. [60]	307	307	MSM	no	USA	face-to-face interview	non-probability	CSA
Doll et al. [19]	1001	1001	MSM, gay and bisexual men	no	USA	face-to-face interview	non-probability	CSA, CPA
Drabble et al. [76]	11,169	446	lesbian, bisexual women, same-sex partners	yes	USA	phone interview	probability	CSA, CPA
Eskin et al. [36]	1,262	23	lesbian, gay, bisexual	yes	Turkey	questionnaire	probability	CSA,
Feldman and Meyer [73]	193	193	gay and bisexual men	no	USA	face-to-face interview	non-probability	CSA, CPA
Fields et al. [38]	87	87	MSM	no	USA	face-to-face interview	non-probability	CSA

Table 1 continued

First authors (Year)	Total	LGBT	Population	Control	Location	Interviewing	Sampling	Types of SCE
Finlinson et al. [94]	1,178	93	gay and bisexual men and women	no	USA/PR	face-to-face interview	probability	CSA, CPA
Friedman et al. [95]	2,881	1,383	MSM	no	USA	phone interview	probability	CSA, CPA
Gilmore et al. [77]	1,877	1,877	bisexual and lesbian women	no	USA	questionnaire	non-probability	CSA
Gold et al. [68]	237	237	lesbian women and gay men	no	USA	questionnaire	non-probability	CSA, CPA
Halkitis et al. [50]	102	12	gay and bisexual men	no	USA	phone interview	non-probability	CSA
Heidt et al. [91]	342	342	lesbian, gay, bisexual	no	USA	questionnaire	non-probability	CSA
Hequembourg et al. [78]	634	634	gay and bisexual men	no	USA	questionnaire	non-probability	CSA
Hequembourg et al. [35]	83	83	gay and bisexual men	no	USA	questionnaire	non-probability	CSA
Hughes et al. [22]	829	550	lesbian	yes	USA	questionnaire	non-probability	CSA
Hughes [79]	120	63	lesbian	yes	USA	face-to-face interview	non-probability	CSA
Hughes et al. [66]	477	477	lesbian	no	USA	questionnaire	non-probability	CSA, CPA, HAA
Hughes et al. [80]	953	419	lesbian and bisexual women	yes	USA	face-to-face interview	non-probability	CSA
Hughes et al. [81]	34,653	577	lesbian, gay, bisexual	yes	USA	face-to-face interview	probability	CSA, CPA, CEA
Jinich et al. [55]	1,941	1,941	gay and bisexual men	no	USA	phone interview	non-probability	CSA
Kalichman et al. [51]	647	647	MSM	no	USA	questionnaire	non-probability	CSA, CPA
Kersting et al. [39]	156	41	transsexual (MTF and FTM)	no	Germany	questionnaire	non-probability	CSA, CPA, CEA, CPN, CEN
Krahé et al. [40]	325	310	men with homosexual experience	no	Germany	questionnaire	non-probability	CSA, CPA, CEN
Lehmann et al. [23]	53	53	lesbian and bisexual women	no	USA	questionnaire	non-probability	CSA, CPA
Lenderking et al. [86]	327	327	gay and bisexual men	no	USA	questionnaire	non-probability	CSA
Matthews et al. [69]	829	550	lesbian	yes	USA	questionnaire	non-probability	CSA
Matthews et al. [84]	328	328	sexual minority women	no	USA	face-to-face interview	non-probability	CPA
McLaughlin et al. [82]	13,962	472	lesbian, gay, bisexual	yes	USA	face-to-face interview	probability	CSA, CPA
Mimiaga et al. [52]	4,295	4,295	MSM	no	USA	questionnaire	non-probability	CSA
Morris and Balsam [92]	2,431	2,431	lesbian	no	USA	questionnaire	non-probability	CSA, CPA
Parsons et al. [56]	46	46	gay and bisexual men	no	USA	phone interview	non-probability	CSA
Paul et al. [87]	2,881	2,881	MSM, gay and bisexual men	no	USA	phone interview	probability	CSA
Ratner et al. [42]	358	358	MSM, gay, bisexual men, transgender,	no	Canada	questionnaire	non-probability	CSA
Roberts et al. [65]	1,139	1,139	lesbian	no	USA	questionnaire	non-probability	CSA, HDA, HAA
Roberts et al. [63]	34,653	576	lesbian, gay, bisexual	yes	USA	face-to-face interview	probability	CPA, CPN, WTG

Table 1 continued

First authors (Year)	Total	LGBT	Population	Control	Location	Interviewing	Sampling	Types of SCE
Roberts et al. [72]	9,369	368	lesbian and bisexual women	yes	USA	questionnaire	probability	CSA, CPA, CEA
Robohm et al. [88]	433	227	lesbian and bisexual women	no	USA	online questionnaire	non-probability	CSA
Smith et al. [98]	867	475	lesbian	yes	USA	questionnaire	non-probability	CSA
Stanley et al. [43]	300	192	gay and bisexual men	no	Canada	face-to-face interview	probability	CSA
Stoddard et al. [93]	648	324	lesbian	yes	USA	questionnaire	non-probability	CSA, CPA
Sweet and Welles [53]	33,902	1243	lesbian, gay, bisexual, same-sex attraction	yes	USA	face-to-face interview	probability	CSA
Tjaden et al. [18]	16,000	144	same-sex cohabitation	yes	USA	phone interview	probability	CSA, CPA
Tomeo et al. [20]	942	277	gay and lesbian	yes	USA	questionnaire	non-probability	CSA
Toro-Alfonso et al. [96]	199	199	gay and bisexual men	no	Puerto Rico	questionnaire	non-probability	CSA, CPA, CEA
Weingourt [100]	94	27	homosexual women	yes	USA	questionnaire	non-probability	CSA
Welles et al. [54]	593	593	MSM	no	USA	questionnaire	non-probability	CSA
Wilsnack et al. [83]	953	405	lesbian	yes	USA	face-to-face interview	non-probability	CSA
Wilsnack [111]	1,328	477	lesbian	yes	USA	face-to-face interview	non-probability	CSA
Wilson and Widom [37]	944	758	same-sex relationships	yes	USA	face-to-face interview	probability	CSA, CPA, CPN
Wong et al. [62]	526	526	MSM, gay and bisexual men	no	USA	computer interview	non-probability	CSA, CPA, CEA, WTN
Zietsch et al. [46]	9,884	312	lesbian, gay, bisexual	yes	Australia	face-to-face interview	probability	CSA, CPA, RFE

MSM men who have sex with men, *CEN* childhood emotional neglect, *MTF* men to female, *HDA* family history of drug abuse, *CSA* childhood sexual abuse, *HAA* family history of alcohol abuse, *CPA* childhood physical abuse, *WTG* witnessing domestic violence, *CEA* childhood emotional abuse, *RFE* risky family environments, *CPN* childhood physical neglect, *PSD* parental separation or divorce, *IHM* incarceration household member, *HMI* family history of mental illness

Prevalence of stressful childhood experiences

Table 2 lists the categories CSA, CPA, CEA, CPN, and CEA by gender. Prevalence for CSA ranged between 9.1 and 67 % for men (median: 22.0 %), and 0 to 68.0 % for women (median: 32.2 %). Rates for CPA in men were established between 2.5 and 70.6 % (median: 22.3 %). The rates for women were between 2.6 and 38.0 % for CPA (median: 26.6 %). CEA rates for men were represented between 4.0 and 52.6 % (median: 45.0 %). For women, the range was between 2.0 and 60.8 % (median: 45.5 %). Only four studies [37, 39, 63, 64] presented prevalence for CPN, of which Roberts et al. [63] showed that the prevalence for men was 10.0 % and for women 10.5 %. Kersting et al. [39] focused on transgender (MTF and FTM) individuals yielding a prevalence for CPN of 51.2 %. Alvy et al. [64] interviewed a population of lesbian and bisexual women and found CPN rates of 14.1 %. In a population of men and women with same-sex relationships, the prevalence of CPN varied from 4.0 to 6.3 % for men and from 2.0 to 7.3 % for women [37]. Research targeting rates of CEN were present in two studies, Krahé et al. [40] analyzed a male population (prevalence: 30.0 %) and Kersting et al. [39] focused on a transgender population (CEN prevalence: 78.0 %). The items of household dysfunction were assessed in five studies. Roberts et al. [65] showed that in a cohort of women, 19.0 % of positive family histories of drug abuse and 49.0 % positive family histories of alcoholism, while Hughes et al. [66] accounted for 36.0 % of parental drinking problems. Roberts et al. [63] reported the prevalence of witnessing violence (17.7 %) during childhood and Zietsch et al. [46] described risky family environments (41.4 %), which consisted of an operationalized scale including unpleasant disagreements with parents, not being close to parents, parents fighting with each other, and alcohol consumption of parent. In a recent study Andersen, Blosnich [67] addressed several items of household dysfunction in a gay and lesbian population: household mental

Table 2 Calculated rates of severe childhood experiences in sexual minority populations

	Childhood sexual abuse			Childhood physical abuse			Childhood emotional abuse			Childhood physical neglect			Childhood emotional neglect		
	Total	Men	Women	**Total**	Men	Women	**Total**	Men	Women	**Total**	Men	Women	**Total**	Men	Women
Aaron and Hughes [97]	**31.0 %**	–	31.0 %	–	–	–	–	–	–	–	–	–	–	–	–
Alvy et al. [64]	**59.6 %**	–	59.6 %	**26.9 %**	–	26.9 %	–	–	–	**14.1 %**	–	14.1 %	–	–	–
Andersen and Blosnich [67]	**29.7 %**	–	–	**29.3 %**	–	–	**47.9 %**	–	–	–	–	–	–	–	–
Arreola et al. [59]	**20.7 %**	20.7 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Arreola et al. [61]	**15.8 %**	15.8 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Austin et al. [89]	**19.4 %**	–	19.4 %	**28.2 %**	–	28.2 %	–	–	–	–	–	–	–	–	–
Austin et al. [99]	**45.0 %**	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Balsam et al. [58]	**40.0 %**	–	–	**40.0 %**	–	–	–	–	–	–	–	–	–	–	–
Balsam et al. [90]	**40.8 %**	33.7 %	44.9 %	**17.9 %**	18.9 %	17.3 %	–	–	–	–	–	–	–	–	–
Balsam et al. [71]	**38.4 %**	32.0 %	42.4 %	**36.6 %**	35.3 %	37.5 %	**56.8 %**	50.2 %	60.8 %	–	–	–	–	–	–
Balsam et al. [112]	**35.5 %**	31.0 %	44.0 %	–	–	–	–	–	–	–	–	–	–	–	–
Bandini et al. [41]	**15.6 % (MTF)**		–	**6.4 % (MTF)**		–	**7.3 % (MTF)**		–	–	–	–	–	–	–
Bartholow et al. [47]	**34.3 %**	34.3 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Benoit and Downing [57]	**30.3 %**	30.3 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Bradford et al. [17]	**21.0 %**	–	21.0 %	**24.0 %**	–	24.0 %	–	–	–	–	–	–	–	–	–
Brennan et al. [48]	**15.5 %**	15.5 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Carballo-Dieguez and Dolezal [49]	**18.0 %**	18.0 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Carballo-Dieguez et al. [45]	**32.2 %**	29.0 %	**51.0 % (MTF)**		–	–	–	–	–	–	–	–	–	–	–
Catania et al. [85]	**22.0 %**	22.0 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Chen et al. [44]	**60.0 %**	60.0 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Corliss et al. [21]	–	–	–	**29.7 %**	26.9 %	33.6 %	**48.7 %**	52.6 %	45.5 %	–	–	–	–	–	–
Corliss et al. [70]	**23.4 %**	–	23.4 %	**27.6 %**	–	27.6 %	**48.1 %**	–	48.1 %	–	–	–	–	–	–
Dolezal et al. [60]	**33.0 %**	33.0 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Doll et al. [19]	**37.0 %**	37.0 %	–	**32.0 %**	–	–	–	–	–	–	–	–	–	–	–
Drabble et al. [76]	**21.7 %**	–	21.7 %	**29.8 %**	–	29.8 %	–	–	–	–	–	–	–	–	–
Eskin et al. [36]	**47.8 %**	72.7 %	25.0 %	–	–	–	–	–	–	–	–	–	–	–	–
Feldman and Meyer [73]	**34.0 %**	34.0 %	–	**33.0 %**	33.0 %	–	–	–	–	–	–	–	–	–	–
Fields et al. [38]	**32.0 %**	32.0 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Finlinson et al. [94]	**20.4 %**	26.3 %	16.4 %	**22.6 %**	23.7 %	21.8 %	–	–	–	–	–	–	–	–	–
Friedman et al. [95]	**21.0 %**	21.0 %	–	**25.7 %**	25.7 %	–	–	–	–	–	–	–	–	–	–
Gilmore et al. [77]	**38.4 %**	–	38.4 %	–	–	–	–	–	–	–	–	–	–	–	–
Gold et al. [68]	**24.1 %**	21.7 %	26.2 %	**21.1 %**	15.7 %	26.2 %	–	–	–	–	–	–	–	–	–
Halkitis et al. [50]	**67.0 %**	67.0 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Heidt et al. [91]	**20.1 %**	18.6 %	22.0 %	–	–	–	–	–	–	–	–	–	–	–	–
Hequembourg et al. [78]	**15.3 %**	15.3 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Hequembourg et al. [35]	**51.0 %**	51.0 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Hughes et al. [22]	**41.0 %**	–	41.0 %	–	–	–	–	–	–	–	–	–	–	–	–
Hughes [79]	**68.0 %**	–	68.0 %	–	–	–	–	–	–	–	–	–	–	–	–
Hughes et al. [66]	**31.0 %**	–	31.0 %	**22.0 %**	–	**22.0 %**	–	–	–	–	–	–	–	–	–

Table 2 continued

	Childhood sexual abuse			Childhood physical abuse			Childhood emotional abuse			Childhood physical neglect			Childhood emotional neglect		
	Total	Men	Women	**Total**	Men	Women	**Total**	Men	Women	**Total**	Men	Women	**Total**	Men	Women
Hughes et al. [80]	**39.6 %**	–	39.6 %	–	–	–	–	–	–	–	–	–	–	–	–
Hughes et al. [81]	**26.0 %**	14.1 %	36.7 %	**8.8 %**	6.3 %	11.1 %	–	–	–	**10.4 %**	10.0 %	10.5 %	–	–	–
Jinich et al. [55]	**28.0 %**	28.0 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Kalichman et al. [51]	**15.0 %**	15.0 %	–	**16.4 %**	16.4 %	–	–	–	–	–	–	–	–	–	–
Kersting et al. [39]	**19.5 % (MTF and FTM)**			**26.8 % (MTF and FTM)**			**48.8 % (MTF and FTM)**			**51.2 % (MTF and FTM)**			**78 % (MTF and FTM)**		
Krahé et al. [40]	**20.7 %**	20.7 %	–	**21.6 %**	21.6 %	–	–	–	–	–	–	–	**30.0 %**	30.0 %	–
Lehmann et al. [23]	**19.0 %**	–	19.0 %	**34.0 %**	–	34.0 %	–	–	–	–	–	–	–	–	–
Lenderking et al. [86]	**35.5 %**	35.5 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Matthews et al. [69]	**30.0 %**	–	30.0 %	–	–	–	–	–	–	–	–	–	–	–	–
Matthews et al. [84]	–	–	–	**21.5 %**	–	21.5 %	–	–	–	–	–	–	–	–	–
McLaughlin et al. [82]	**8.3 %**	–	–	**13.6 %**	–	–	–	–	–	–	–	–	–	–	–
Mimiaga et al. [52]	**39.7 %**	39.7 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Morris and Balsam [92]	**39.3 %**	–	39.3 %	**30.8 %**	–	30.8 %	–	–	–	–	–	–	–	–	–
Parsons et al. [56]	**28.3 %**	28.3 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Paul et al. [87]	**20.6 %**	20.6 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Ratner et al. [42]	**14.0 %**	14.0 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Roberts et al. [65]	**51.0 %**	–	51.0 %	–	–	–	–	–	–	–	–	–	–	–	–
Roberts et al. [63]	–	–	–	**8.3 %**	11.1 %	6.3 %	–	–	–	**10.2 %**	10.0 %	10.5 %	–	–	–
Roberts et al. [72]	–	19.2–20.6 %	31.4–32.9 %	–	19.8–23.1 %	16.5–37.2 %	–	19.2–19.8 %	20.0–35.8 %	–	–	–	–	–	–
Robohm et al. [88]	**37.9 %**	–	37.9 %	–	–	–	–	–	–	–	–	–	–	–	–
Smith et al. [98]	**30.2 %**	–	30.2 %	–	–	–	–	–	–	–	–	–	–	–	–
Stanley et al. [43]	**12.5 %**	12.5 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Stoddard et al. [93]	**26.6 %**	–	26.6 %	**20.4 %**	–	20.4 %	–	–	–	–	–	–	–	–	–
Sweet and Welles [53]	**26.6 %**	19.1 %	34.4 %	–	–	–	–	–	–	–	–	–	–	–	–
Tjaden et al. [18]	**16.0 %**	15.4 %	16.5 %	**64.9 %**	70.8 %	59.5 %	–	–	–	–	–	–	–	–	–
Tomeo et al. [20]	**45.5 %**	49.2 %	42.5 %	–	–	–	–	–	–	–	–	–	–	–	–
Toro-Alfonso et al. [96]	**14.0 %**	14.0 %	–	**42.0 %**	42.0 %	–	**49.0 %**	49.0 %	–	–	–	–	–	–	–
Weingourt [100]	**55.5 %**	–	55.5 %	–	–	–	–	–	–	–	–	–	–	–	–
Welles et al. [54]	**47.0 %**	47.0 %	–	–	–	–	–	–	–	–	–	–	–	–	–
Wilsnack et al. [83]	**59.4 %**	–	59.4 %	–	–	–	–	–	–	–	–	–	–	–	–
Wilsnack [111]	**55.8 %**	–	55.8 %	–	–	–	–	–	–	–	–	–	–	–	–
Wilson and Widom [37]	–	9.1–27.3 %	0.0–10.2 %	–	2.5–5.0 %	2.6–7.9 %	–	4.0–6.3 %	2.0–7.3 %	–	4.0–6.3 %	2.0–7.3 %	–	–	–
Wong et al. [62]	**18.0 %**	18.0 %	–	**23.0 %**	23.0 %	–	**41.0 %**	41.0 %	–	–	–	–	–	–	–
Zietsch et al. [46]	**18.3 %**	12.0 %	24.0 %	**39.1 %**	40.0 %	38.0 %	–	–	–	–	–	–	–	–	–

Where prevalence rates could not be calculated, results are expressed as a range

MTF male to female transgender, *FTM* female to male transgender

illness (26.5 %), household substance abuse (46.5 %) incarcerated household member (7.3 %), parental separation or divorce (25.8 %), and exposure to domestic violence (24.1 %). Twenty-eight studies (Table 1) had a heterosexual control group. The median rates for CSA in the heterosexual group were 17.0 %, in the sexual minority groups that had a control group, the median CSA rate was 35.5 %. CPA was present in 11.0 % of heterosexual participants and 27.0 % of the compared non-heterosexual population. The median prevalence for CEA was 29.6 % in the control group versus 46.4 % of the analyzed LGBT groups.

Health outcomes

There were a vast variety of analyzed outcomes that the authors related to the aforementioned SCE. The outcome variables are listed in Table 3 and grouped into five different categories: psychiatric symptoms, substance abuse, dysfunctional behavioral adjustments, revictimization, and others.

Psychiatric symptoms

The most commonly described psychiatric outcomes were depressive symptoms [47, 54, 66, 68, 69] and suicidal symptoms [36, 47, 69, 70]. Four studies focused on symptoms of posttraumatic stress disorder [58, 68, 71, 72]. Anxiety related health outcomes were the focus of three publications [54, 58, 71]. Feldman and Meyer [73] showed correlations between CSA and symptoms of eating disorders in a population of gay and bisexual men. Two studies [41, 58] analyzed compound psychiatric symptomatology using the Global Severity Index [74, 75].

Substance abuse

Out of the 18 studies focusing on substance abuse related to SCE, 14 analyzed alcohol use, abuse, dependence or other alcohol-related problems [42, 54, 58, 60, 65, 76–83]. Four studies showed correlations between CSA and illicit substance use [47, 48, 51, 58]. Bartholow et al. [47] and Kalichman et al. [51] reported connections between CSA and tobacco use, while Matthews et al. [84] reported age of smoking onset and current smoking status to be mediators between CPA and self-reported health status.

Dysfunctional behavioral adjustment

All of the studies analyzing dysfunctional behavioral adjustments focused on the correlation between CSA and increased high-risk sexual behavior [49–52, 54, 60, 61, 66, 85–88]. Carballo-Dieguez et al. [45] were not able to replicate these findings in a Brazilian population of MSM and transgender people. Robohm et al. [88] were the only authors to study a female population.

Revictimization

Adult revictimization experiences included sexual, physical, and emotional abuse in adulthood. Seven studies analyzed female populations [76, 77, 89–93] and eight studies focused their attention on male subjects [35, 40, 51, 90, 91, 94–96].

Other outcomes

Two studies reported an association between CSA and obesity; women with histories of CSA were more likely to be obese [97, 98]. SCE showed to be correlated with the incidence of sexually transmitted diseases in men and women [53, 99]. Weingourt [100] described that women with histories of CSA described less sexual satisfaction in their relationships. Wilson and Widom [37] stated that men and women with histories of CSA were more likely to ever having had same-sex sexual partners.

Discussion

The assessed studies span over a time period of more than 20 years. Most studies, however, have been conducted in the last 5–10 years. Most studies originated from the United States of America (US) and Puerto Rico. Therefore, a generalization of the presented data is mostly limited to the US and not applicable to the rest of the world. Considering the vast variety of examined populations, cultures, subcultures, ethnicities, and groups, the definition of what is considered an abusive experience itself varies significantly [101].

Prevalence of stressful childhood experiences

Most studies addressed CSA. Some of the variability of prevalence might be explained by different sampling methods and different definitions of CSA. Definitions ranged from any contact sexual abuse to rape. Fifteen studies compared the rates of CSA with a heterosexual control group, showing a higher prevalence for the minority group (18.0 vs. 35.5 %). This supports prior studies [18] that postulated that sexual minority populations had a higher risk of SCE. Race or ethnicity showed to have an impact on CSA prevalence; in that, African-American men in a cohort of internet escorts were eight times more likely to report CSA than Caucasian men [56]. In contrast to CSA, the other two abuse variables CPA and

Table 3 Health outcomes of severe childhood experiences in sexual minority populations

Authors	Outcomes
Psychiatric symptoms	
Balsam et al. [58]	Sexual minority people in Native-American populations (two spirits) scored higher on the anxiety subscale of the brief symptom inventory, on symptoms of posttraumatic stress as assessed by the Impact of Event Scale, and the Global Severity Index
Balsam et al. [71]	CSA, CPA, and CEA were strong predictor for current PTSD and anxiety symptoms
Bandini et al. [41]	Found higher scores for the global severity index on the symptom checklist-90 revised (SCL-90-R) as well as significant differences for body image concerns, avoidance, compulsive self-monitoring, depersonalization, and positive symptoms
Bartholow et al. [47]	Showed that men with a history of SCE are more likely to have been hospitalized for depression (10 vs. 5 %, $x^2 = 8.4$, $p < 0.004$); and for suicidal thoughts or actions (13 vs. 5 %; $x^2 = 17.2$, $p < 0.0001$)
Corliss et al. [70]	This study focusing on bisexual and lesbian women found associations of childhood maltreatment and suicide attempts
Eskin et al. [36]	Identified childhood sexual abuse as an independent predictor of suicidal ideations and suicidal attempts in a population of lesbian, gay, and bisexual students
Feldman and Meyer [73]	A cohort of 193 gay and bisexual males showing that men with histories of CSA are more likely to have subclinical bulimia (odds ratio 3.4; CI 1.2–9.3) or any current full-syndrome (odds ratio 2.6; CI 1.2–5.7) or subclinical eating disorder (odds ratio: 3.8; CI 1.2–12.0) compared with men who do not have a history of CSA
Gold et al. [68]	Indicated that CPA predicted depressive symptoms for gay men, $\beta = 0.23$, $t(107) = 2.38$, $p < 0.05$, and lesbian women, $\beta = 0.22$, $t(115) = 2.46$, $p < 0.05$. In a similar fashion, CPA predicted PTSD symptoms for both gay men, $\beta = 0.26$, $t(108) = 2.74$, $p < 0.01$, and lesbian women, $\beta = 0.42$, $p < 0.001$
Hughes et al. [66]	Lesbians sexually abused in childhood were more likely than those without CSA to report lifetime depression (71.5 vs. 50.2 %, $p < 0.001$) and also those who were physically abused in childhood were significantly more likely to report lifetime depression (71.9 vs. 52.3 %, $p = 0.001$)
Matthews et al. [69]	Presented higher rates of suicidal behavior and of several risk factors for depressive distress among lesbian populations
Roberts et al. [72]	Demonstrated that SCE were linked to PTSD disparities by sexual orientation
Welles et al. [54]	In a population of HIV positive MSM respondents, who reported a history of CSA had significantly higher levels of depression and anxiety, with 39 % reporting the highest quartile scores for the depression and anxiety subscale of the brief symptoms inventory
Substance abuse	
Balsam et al. [58]	In a specific subgroup of Native Americans minority sexual participants (two-spirit) had their first alcoholic drink at a younger age than heterosexual participants and were more likely than their heterosexual counterparts to have used illicit drugs other than marijuana
Bartholow et al. [47]	Homo- and bisexual men with a history of CSA were more likely to have ever used tobacco, cocaine, crack, stimulants, hallucinogens, and opiates, and began using the drugs at significantly younger ages than users without traumatic histories
Brennan et al. [48]	This cross-sectional study demonstrated that homo- and bisexual men with histories of CSA were 6.4 times more likely (95 % CI = 2.15, 18.91; $p < 0.001$) to be a current user of sex-related drugs such as cocaine, crack, amyl nitrate, crystal methamphetamine, Ecstasy, and Special K (ketamine)
Dolezal et al. [60]	Analyzed alcohol use in adulthood in a population of MSM with histories of CSA and found significant differences ($p = 0.045$), showing increased use in the subjects with abuse histories
Drabble et al. [76]	This study showed that heterosexual women were less likely than sexual minority women to report current drinking, heavy episodic drinking, and intoxication in the past 12 months
Gilmore et al. [77]	The authors demonstrated CSA severity to be indirectly associated with drinking norms ($\beta = 0.071$, $p < 0.05$) and drinking behavior ($\beta = 0.079$, $p < 0.05$) in a population of bisexual and lesbian women
Hequembourg et al. [78]	In this study, most men with histories of CSA (86.3 %) reported ever using alcohol
Hughes [79]	CSA was associated with lifetime alcohol abuse in both lesbians and heterosexual women
Hughes et al. [66]	Lesbians sexually abused in childhood were more likely than those without CSA to report lifetime alcohol dependence symptoms (70.8 % vs. 58.8, $p = 0.02$) and early onset of drinking (43.1 vs. 29.6 %, $p = 0.01$), lesbians who were physically abused in childhood were significantly also more likely to report early onset of drinking (45.4 vs. 30.1 %, $p = 0.005$)
Hughes et al. [80]	Sexual minority women reported higher rates of CSA and higher levels of hazardous drinking (heavy episodic drinking, intoxication, drinking-related problems, alcohol dependence problems) with revictimization being the strongest predictor for hazardous drinking

Table 3 continued

Authors	Outcomes
Hughes et al. [81]	The authors analyzed a US national sample of adult heterosexual and sexual minority women and men in order to examine the relationships between SCE and past-year substance use disorders, showing mainly associations between childhood neglect and substance use disorders. Among women who reported childhood neglect, lesbians had more than 30 times the odds of alcohol dependence (odds ratio 30.5; CI 5.2–181.2) than lesbians without these neglect experiences
Kalichman et al. [51]	In a population of gay and bisexual men, those who had a history of CSA were more likely to report tobacco, crack cocaine, and methamphetamine use in the previous 6 months, relative to men who had not been abused
Matthews et al. [84]	This study showed a significant effect of CPA on self-reported health status, which was mediated both by age of smoking onset ($\beta = -0.16$, $p < 0.001$) and current smoking status ($\beta = -0.49$, $p < 0.001$)
McLaughlin et al. [82]	In a LGB youth (18–27 years old) population, SCE explained between 10 and 20 % of the relative excess of suicidality, depression, tobacco use, and symptoms of alcohol and drug abuse compared with heterosexuals
Ratner et al. [42]	In a study focusing on bisexual and gay men, no association between CSA and alcohol abuse was found; however, if exposed to any sexual revictimization, they were 2.7 (95 % CI 1.8 ± 4.7) times more likely to abuse alcohol
Roberts et al. [65]	CSA was presented as a risk factor for alcoholism (prevalence rate alcoholism: 67 %; non-alcoholism: 47 %, n.s.)
Welles et al. [54]	Men with CSA were more likely to believe that they had problems with drugs or alcohol currently ($p = 0.008$) or in the past ($p = 0.06$)
Wilsnack et al. [83]	The authors addressed hazardous drinking showing that sexual minority women were at higher risk for alcohol problems
Dyfunctional behavioural adjustment	
Arreola et al. [61]	This study demonstrated a link between CSA and sexual risk behavior ($b = 0.043$; SE = 0.023; $z = 2.02$; $B = 0.016$)
Carballo-Dieguez and Dolezal [49]	Men in the CSA group were significantly more likely than men without histories of abuse to engage in receptive anal sex and to do so without protection (56 vs. 22 %; chi-square significance <0.001)
Carballo-Dieguez et al. [45]	This study with MSM and transgender men authors of the same study group could not replicate the results that men with histories of CSA engage in high-risk sexual behavior
Catania et al. [85]	The authors analyzed in a large study the pathways from CSA to sexual risk behavior, showing differences in primary or secondary partner choices
Dolezal et al. [60]	This study analyzed the perception of abused men who had been victims of CSA, they also endorsed more unprotected anal sex (30.4 vs. 21.8 %; $p = 0.042$)
Halkitis et al. [50]	CSA was a risk base for sexual risk behavior
Hughes et al. [66]	Lesbians with CSA histories were also more likely than those without CSA to report early sex (64.2 vs. 37.5 %, $p < 0.001$)
Kalichman et al. [51]	Men who had a history of CSA were more likely to engage in high-risk sexual behavior, and trade sex for money or drugs
Lenderking et al. [86]	This study presented CSA as a significant predictor of unprotected anal intercourse after adjusting for potential confounding variables
Mimiaga et al. [52]	This large-scale randomized HIV prevention trial among MSM observed men with a history of CSA as compared with participants who had no history of CSA: adjusted odds ratio (AOR) = 1.24 for unprotected anal sex (95 % CI 1.12–1.36) and AOR = 1.30 for serodiscordant unprotected anal sex (95 % CI 1.18–1.43)
Paul et al. [87]	Men with histories of CSA were more likely to engage in high-risk sexual behavior than non-abused participants, this sexual risk taking seemed to be mediated by substance use, patterns of sexual contacts, and partner violence
Robohm et al. [88]	In lesbian and bisexual women, CSA lead to emotional and behavioral difficulties as well as a particularly strong associations between CSA and sexual risk-taking behaviors
Welles et al. [54]	Men who suffered CSA often or sometimes had rates of unsafe anal intercourse that were, respectively, 1.1 ($p = 0.11$) and 1.7 ($p < 0.001$) times the rate observed for men reporting no childhood sexual abuse
Revictimization	
Austin et al. [89]	Lesbian women who had experienced CPA were more likely than heterosexual women to report physical abuse again in adolescence
Balsam et al. [90]	A sample of lesbian, gay, and bisexual men and women showed higher prevalence rates for different types of childhood victimization as well as adult victimization compared to a heterosexual control group
Drabble et al. [76]	In this study, bisexual women were more than twice as likely as exclusively heterosexual women (63.1 vs. 31.3 %) to report any adult victimization
Finlinson et al. [94]	In a population of Puerto Rican drug users, bisexual males were three times more likely than heterosexual males to report physical abuse by an intimate partner (CI = 1.7–7.0, $p < 0.001$). Homosexual males were 4 times more likely than their heterosexual counterparts to report this type of violence (CI = 2.6–7.3, $p < 0.001$)

Table 3 continued

Authors	Outcomes
Friedman et al. [95]	Gay men who developed early were more likely, compared to the control group, to experience CSA and gay-related harassment before adulthood
Gilmore et al. [77]	The authors demonstrated CSA severity to be directly associated with more severe alcohol-involved adult sexual assault ($\beta = 0.270$, $p < 0.001$) and forced adult sexual assault severity ($\beta = 0.333$, $p < 0.001$) in a population of bisexual and lesbian women
Heidt et al. [91]	Comparisons within LGBT populations exhibited that gay men and bisexual men and women were more likely to report sexual revictimization than lesbians
Hequembourg et al. [35]	In a population of gay and bisexual males, CSA severity was significantly associated with greater adult sexual assault severity ($\Delta R_2 = 0.06$, $p < 0.01$)
Kalichman et al. [51]	Men with histories of CSA were more likely to have been hit by a relationship partner (54 %), relative to men with no history of child sexual abuse (25 %), χ^2 (1, $N = 605$) = 29.87, $p < 0.001$
Krahé et al. [40]	The authors showed significant interactions between adult victimization and the following SCE: physical abuse, likelihood ratio (LR) x^2 (2, $N = 302$) = 17.69, $p < 0.000$; childhood sexual abuse, x^2 (2, $N = 189$) = 11.10, $p < 0.01$; and emotional neglect, x^2(2, $N = 299$) = 19.51, $p < 0.000$
Morris and Balsam [92]	Lesbians who were sexually or physically victimized in childhood were four times more likely to experience the same type of victimization during adulthood
Stoddard et al. [93]	This study analyzed a group of lesbian women and their heterosexual sisters, showing higher rates of lifetime physical (32.7 vs. 18.8 %, $p < 0.001$) and sexual victimization (34.9 vs. 20.7 %, $p < 0.001$) for lesbian women without analyzing any relationship to SCE
Toro-Alfonso et al. [96]	This study looked at domestic violence in gay male couples and found significant relationships between adult emotional victimization and childhood experiences of emotional violence ($\chi \leq 9.150$; $df = 1$; $p \leq 0.003$), and childhood experiences of physical violence ($\chi \leq 5.077$; $df = 1$; $p \leq 0.025$), and childhood experiences of sexual violence ($\chi \leq 5.682$; $df = 1$; $p \leq 0.022$), in addition an association between adult physical violence and childhood sexual violence was described ($\chi \leq 7.412$; $df = 1$; $p \leq 0.011$)
Other outcomes	
Aaron and Hughes [97]	The authors demonstrated association between CSA and obesity, showing differences in body mass index (BMI), women who had reported CSA were more likely to be obese (odds ratio, 1.9; 95 % CI, 1.1–3.4) or severely obese (odds ratio, 2.3; 95 % CI, 1.1–5.2)
Austin et al. [99]	Women who considered themselves to be "mostly heterosexual" were more likely than heterosexual participants to report having ever been diagnosed with a sexually transmitted illness (43 vs. 15 %; $p < 0.001$)
Smith et al. [98]	The authors revealed an association between intrafamilial CSA and obesity (adjusted odds ratio: 1.58; CI 1.10–2.27)
Sweet and Welles [53]	In a population of lesbian, gay, and bisexual men and women, sexual minority women who had frequently experienced CSA were 3.8 times as likely to have incident HIV or STI compared with those never abused. Sexual minority men had 4.2-fold risk (OR = 4.23, 95 % CI = 2.36–7.59)
Weingourt [100]	This study showed that homosexual and heterosexual women with histories of CSA expressed less sexual satisfaction but the abuse experience did not significantly impact relationship satisfaction
Wilson and Widom [37]	This large prospective cohort study following abused children found at the 40 year follow up that CPA and CPN were not significantly associated with same-sex cohabitation or sexual partners. Men and women with documented histories of CSA were significantly more likely than controls to report ever having had same-sex sexual partners (OR = 2.81, 95 % CI = 1.16–6.80, $p \leq 0.05$); however, only men with histories of childhood sexual abuse were significantly more likely than controls to report same-sex sexual partners (OR = 6.75, 95 % CI = 1.53–29.86, $p \leq 0.01$)

CEA showed less variation related to the sampling type. When compared to majority sexual control groups, the higher rates for minority sexual population were evident (CPA: 11.0 vs. 20.0 %; CEA: 23.6 vs. 38.1 %). It remains unclear as to why only CSA showed different prevalence related to the sampling method. Studies have shown that stigmatization and recall bias might lead to underreporting in CSA [102]. Population-based sampling in contrast to population recruited at specific events might also be more likely to reach people that were not open about their sexual orientation or gender identity; therefore, more inhibited to openly address histories of CSA. In addition, the interviewing method had an impact on the prevalence. The literature on this issue is inconclusive [103], some authors suggested that in regards to CSA disclosure rates tended to be higher in face-to-face interviews as opposed to questionnaires [104], others have found no differences between the methods of administration [105]. General consensus seems to be that in the psychiatric population trauma rates tend to be underreported [106].

CPA also showed a variation in terms of its definition, ranging from being hit so hard that it left bruises to being

punished with an object, which required hospitalization. Neglect variables were only addressed in two studies, one analyzing CEN and CEA in a population of transgender people and the other targeting men only. One study described family histories of alcoholism and drug abuse [65]; Roberts et al. [63] also presented rates of witnessing domestic violence. Another study group analyzed risky family environment [46]. The paucity of data regarding variables of household dysfunction in LGBT population does not permit to make any conclusions or generalizations on the prevalence of SCE or any outcomes related to SCE, about individuals with non-heterosexual orientation. The importance of cumulative traumatic experiences has been highlighted by several studies [1, 6, 107], but no study addressed this topic in LGBT populations.

Health outcomes

Psychiatric symptoms

The reviewed studies showed associations between SCE and psychiatric symptoms, confirming that the results of other study samples [16], HMO samples [12], and psychiatric samples [6, 14] are replicable in LGBT populations. The higher prevalence of psychiatric symptoms might be related to higher rates of SCE in this population. However, it needs to be taken into consideration that the stress related to living as a sexual minority can lead to psychiatric symptoms on its own [28]. In addition, the lack of data regarding cumulative exposures might modify the results.

Substance abuse

The studies addressed mainly CSA without analyzing other abuse forms. Studies focusing on female participants examined more alcohol-related problems such as hazardous drinking, alcohol abuse, and alcohol dependence. Men-focused analyses targeted drugs such as cocaine, crack, amyl nitrate, crystal methamphetamine, Ecstasy, and Special K (ketamine). These results expanded prior knowledge that SCE were linked to adulthood substance use [9, 10]. In the absence of prospective studies, these associations are a lack of proof that substance abuse is causally linked to CSA.

Dysfunctional behavioral adjustments

Felitti et al. [1] explained that individuals with histories of SCE might adopt high-risk behavior in an unsuccessful attempt to cope with the social, emotional, and cognitive impairments caused by the trauma. The reviewed studies were able to demonstrate similar behavioral outcomes in traumatized LGBT populations. Similar to substance abuse outcome variables, the behavioral outcomes were mainly related to CSA. One study focusing on MSM and transgender people was not able to replicate these results [45]. The authors speculated that in Brazil different cultural perceptions regarding sex with an older partner might lead some participants to experience the sexual act as non-abusive.

Revictimization

On the one hand, some of the described studies were able to show associations between different forms of SCE and later victimization. On the other hand, some of the studies demonstrated higher revictimization rates in sexual minority populations as compared to heterosexual control groups. It is possible that SCE in LGBT populations could increase environmental and personal stress on the individual. In return, this can lead to high-risk behavior [6] putting the individual at risk for victimization. Openly identifying as LGBT might place the individual at higher risk for victimization [108, 109]. Considering the fact that the analyzed studies did not have a longitudinal design, no causal connection could be made.

Other outcomes

This review shows that SCE in an LGBT population were related to a vast array of negative outcomes ranging from psychiatric symptoms to physical health issues. The association between SCE and obesity in a population of lesbian women or STD in both gay and lesbian people could be explained with maladaptive behavior leading to health risks [1]. Independent of the pathway, these results suggest that findings in other populations such as the health organization sample described by Felitti et al. [1] are supported and amplified in a sexual minority population.

Limitations

The analyzed population was comprised of different subpopulations, different types of sexual orientation and gender identities, including females, males, and transgender people. Studies with heterogeneous study samples reported a variety of results, which made a clear synthesis of the prevalence and health outcomes difficult. As shown in this review, there were phenomena specific to some subgroups and not to others. The differentiation between sexual minority and sexual majority population was rather speculative in nature; in this review, for example, we did include people who consider themselves mostly heterosexual into the sexual minority group [99]. The analyzed

populations were 18 years or older and included only recalled data. With recalled data, non-disclosure of childhood adversities could influence the presented data and produce false negative results, depending on abuse severity and the age at which the abuse was experienced [110]. For an analysis of CSA and CPA in children and adolescents, we would like to refer to the meta-analysis of Friedman et al. [26]. We did not limit our analysis to studies using heterosexual control groups. This leads to a limited validity regarding prevalence when compared to a general population. The focus of this review was on the frequency of SCE and not on the intensity, not many studies addressed this important aspect of SCE [111]. Due to the scarcity of literature, different types of sampling methods were included in this review, involving probability and non-probability methods. Methodological differences might account for some of the prevalence variability. Definitions of different types of SCE were accepted, including different intensities, frequencies and forms of abuse, which might explain the rather broad range of prevalence. The studies also used different methods of interviewing, ranging from paper questionnaires to face-to-face interviews, which might have affected the results. The anonymity of a questionnaire might be conducive to disclose more information; on the other hand, interviews conducted by trained clinicians might allow for a trusting relationship and safe environment, where the person might be able to disclose traumatic experiences. Future studies should aim to use more standardized instruments to assess SCE in order to have better options for comparison. None of the studies addressed cumulative trauma, preventing any statement about aggregate phenomena related to complex forms of trauma in this population.

Conclusions

SCE, including childhood abuse and household dysfunction, showed high prevalence in LGBT populations. Outcomes related to SCE were multiple and ranged from psychiatric symptoms and disorders to physical ailments. Minority sexual populations were also at higher risk for alcohol and substance abuse. Overall LGBT populations were vulnerable to victimization experiences throughout their lives.

Most studies were based in the United States of America and Puerto Rico. It is possible that admitting to have a non-heterosexual orientation or different gender identity in a third world country might place the individual at risk. Performing studies in these countries might be very difficult as it is virtually impossible to recruit people to participate in this kind of research. Despite these difficulties, future research should aim to target culturally different LGBT population in the rest of the world. Due to difficulties recruiting LGBT participants from general population samples, most studies rely on convenience sampling. This method contributes important results to the understanding of SCE in LGBT population. However, prospective probability studies have the advantage to explain causality in the described phenomena. Further research should try to implement these methods to advance the knowledge of minority sexual population. The noteworthy lack of studies on the transgender population points out the urgent need for more research. Transgender people are among the most vulnerable members of our society and therefore need to be supported. In sum, this review shows that LGBT populations are often subject to SCE and suffer throughout adulthood from many negative health outcomes. Health care providers should be attentive to the possibility of SCE in their LGBT clients, and the potential long-term negative impacts on both physical and mental health, making trauma informed care a necessity in the health care delivery system of this population. On a public health level, efforts should be made to sensitize the LGBT and general population to SCE in order to prevent further abuse. Policy and lawmakers should take these facts into consideration and aim to protect this vulnerable population from maltreatment.

Conflict of interest None.

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