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Gender differences in the impact of population-level alcohol policy interventions: evidence synthesis of systematic reviews.

Niamh Fitzgerald¹, Kathryn Angus¹, Carol Emslie², Deborah Shipton³, Linda Bauld¹

¹ Institute for Social Marketing, UK Centre for Tobacco and Alcohol Studies, School of Health Sciences, University of Stirling, FK9 4LA, UK

² Institute for Applied Health Research / School of Health & Life Sciences, Glasgow Caledonian University, G4 0BA, UK

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Abstract

Background: Consistent review-level evidence supports the effectiveness of population-level alcohol policies in reducing alcohol-related harms. Such policies interact with well-established social, cultural and biological differences in how men and women perceive, relate to and use alcohol, and with wider inequalities, in ways which may give rise to gender differences in policy effectiveness.

Aims: To examine the extent to which gender-specific data and analyses were considered in, and are available from, systematic reviews of population-level alcohol policy interventions, and where possible, to conduct a narrative synthesis of relevant data.

Methods: A prior systematic 'review of reviews' of population level alcohol interventions 2002-2012 was updated to May 2014, all gender-relevant data extracted, and the level and quality of gender reporting assessed. A narrative synthesis of extracted findings was conducted.

Results: Sixty-three systematic reviews, covering ten policy areas, were included. Five reviews (8%) consistently provided information on baseline participation by gender for each individual study in the review and twenty-nine (46%) reported some gender-specific information on the impact of the policies under consideration. Specific findings include evidence of possible gender differences in the impact of and exposure to alcohol marketing, and a failure to consider potential unintended consequences and harm to others in most reviews.

Conclusions: Gender is poorly reported in systematic reviews of population-level interventions to reduce alcohol-related harm, hindering assessment of the intended and unintended effects of such policies on women and men.

1 Introduction

2 The identification and implementation of effective policies to reduce the adverse consequences of
3 alcohol is a major public health imperative (1). While the heterogeneity of the interventions and
4 outcomes may impede understanding of the mechanisms of effect, (2–4), consistent review-level
5 evidence supports the effectiveness of population-level alcohol policy interventions. These include
6 those involving regulatory enforcement such as increased taxation or price controls, drink-driving
7 limits, and the regulation of availability and marketing (4,5).

8
9 There is persistent and strong evidence, from multiple countries worldwide, that men and women
10 relate to, perceive and use alcohol differently (6,7). *“Nearly everywhere that epidemiological or
11 ethnographic research has been carried out, historically and cross-culturally, men have consumed
12 more alcohol than women”* (8)(p153). Women are more likely to abstain; men are more likely to
13 drink heavily and develop alcohol problems (7,9). Women are more likely to suffer intimate partner
14 violence; men to engage in drink-driving (5).

15
16 While sex-linked biological differences influence alcohol consumption and related harms (7,10), the
17 variation in magnitude of differences in drinking between men and women (6,7,10,11), and the
18 convergence in consumption levels between men and women in many countries over recent
19 decades (7,11–14), suggest that societal and cultural influences may be more important. Public
20 excessive drinking has historically been perceived as a demonstration of ‘masculinity’ in western
21 societies (15). Alcohol consumption has historically been associated with fewer social sanctions for
22 men than women (10,16), particularly among poorer populations (17).

23
24 The convergence in drinking between women and men has largely been attributed to a rise in
25 women’s drinking rather than a fall in men’s (18–21). Hypothesized influences include greater
26 gender equality, marriage and parenting at an older age, increasing female participation in the
27 workplace and financial independence, changes in drinking environments such as bar design, and
28 more mixed-gender drinking occasions (16). The alcohol industry is likely to have played, and
29 continues to play, a role through deliberate differentiation between men and women in product
30 development, targeting and marketing: *“in many countries [women] have been the obvious group in
31 which the market has been far from saturated”* (16).

32
33 Policies which attempt to reduce alcohol-related harms interact with social, cultural and biological
34 differences in how men and women relate to, perceive, and use alcohol. For this reason alone, there
35 may be gender differences in the effectiveness and unintended effects of alcohol policy
36 interventions. In addition, these differences intersect with wider gender inequality, which is
37 acknowledged as an influential social determinant of health (22–24): *“sex and society interact to
38 determine who is well or unwell, who is treated or not, who is exposed or vulnerable to ill health and
39 how, whose behaviour is risk-prone or risk-averse, and whose health needs are acknowledged or
40 dismissed”* (23). Increasing recognition of structural gender inequality, and its links with economic
41 and other inequality, has led to efforts to ‘mainstream gender’ within policy-making more broadly
42 (25–28), as well as calls for greater attention to gender in research(23,24,29–31).

43
44 ‘Umbrella’ reviews (reviews of reviews) are increasingly used to synthesize systematic review
45 evidence (32). Published umbrella alcohol policy reviews (4,5) have not focused on how well-
46 represented females are in studies, or the potential role of gender differences in influencing overall
47 policy effectiveness. Therefore, the aims of this umbrella review were to:

- 48
49 • examine the extent to which sex/gender data and analyses were considered in, and are
50 available from, systematic reviews of population-level alcohol policy interventions

- 51 • conduct a narrative synthesis of findings from systematic reviews relating to sex/gender
52 differences in effectiveness or potential effectiveness of such interventions.

53

54 Given the difficulty of separating differences in 'sex' (biological differences between men and
55 women) and 'gender' (cultural constructions of masculinity and femininity), we refer to 'gender' to
56 encompass both, in line with current thinking (33).

57

58

59 **Methods**

60 Search Strategy

61 Martineau and colleagues previously conducted a review of reviews in 10 alcohol policy areas ("the
62 Martineau review") without focusing on sex/gender (4). It was used as the starting point for this
63 umbrella review. Their search strategy (Table 1) from October 2012, identified 52 reviews from
64 2002 onwards from six databases (4); all 52 were included in this current review.

65 <Table 1 to be inserted here>

66

67 The Martineau review search strategy was re-run for the period 1st July 2012 to 19th May 2014, to
68 allow for delays in indexing. Six academic literature databases were searched: five the same as
69 those searched by Martineau and colleagues (*Medline, Database of Abstracts of Reviews of Effects*
70 *(DARE), Cochrane Database of Systematic Reviews, Campbell Collaboration Library of Systematic*
71 *Reviews*, and a site search of the National Institute for Health and Care Excellence's (NICE) website);
72 and one covering the same subject areas (*Applied Social Sciences Index and Abstracts*) as an older
73 database used by Martineau and colleagues (*Social Policy and Practice*). No reviews included in
74 Martineau were identified only in the latter database.

75 Results Screening

76 The search results were downloaded into bibliographic software (RefWorks) and duplicates
77 removed. Two researchers (KA, NF) assessed the new reviews by first applying the Martineau review
78 inclusion criteria (4)(p.259) to titles and abstracts, and then, if necessary, to the full text. The
79 inclusion criteria were:

- 80 1. Does the review have a stated aim to evaluate interventions to reduce alcohol use
81 and/or related harm, and report outcome data on alcohol use and/or related harm?
82 2. Does the review concern intervention effectiveness? (*And include studies with*
83 *controlled, before-and-after or time series designs.*)
84 3. Is at least one of the interventions reviewed population level? (*Exclude interventions*
85 *involving interaction between health professionals and individuals or groups, and*
86 *interventions selectively targeting high-risk individuals, such as those convicted of*
87 *alcohol-related offences.*)
88 4. Is the review a systematic review? (*If the study reports search strategy details, inclusion*
89 *and exclusion criteria, and clearly identifies all included studies. Exclude reviews of*
90 *reviews.*)

91

92 If the answer to all four questions above was yes, the review was included and assigned to the
93 relevant policy area. In the event of any disagreement or doubt about eligibility that could not be
94 resolved by discussion between KA and NF, a third researcher (LB) read the review to resolve
95 disagreement by majority opinion. We planned to use updated reviews in place of the original
96 reviews; however no updated reviews were identified by our search.

97

98 The Martineau review did not limit the searches by language, although all the included reviews were
99 in English. In our updated search, we excluded non-English language reviews due to lack of
100 resources for full-text translation. We planned to list any identified by our search, however none
101 emerged. In both the original and updated searches, reviews were not excluded on the basis of
102 methodological quality other than as outlined in the above criteria. This is in line with guidance on
103 synthesizing evidence on health equity which emphasises an inclusive approach (34).

104

105 Data Extraction

106

107 Each review was assessed for relevant sex/gender content as follows:

108

- 109 • Searchable PDF documents: electronic searches were conducted for key terms (including:
110 male female women woman man men girl boy gender sex mother father maternal paternal
111 daughter son pregnant pregnancy schoolgirl schoolboy husband wife wives spouse spousal);
- 112 • Data extraction tables within reviews: scanned for findings reported by gender using the
113 abbreviations 'f' and 'm', or 'w' and 'm'.
- 114 • PDF documents that were not fully text-searchable or photocopies: full text read carefully
115 for key terms.

116

117 Data were extracted from systematic reviews using a standardised framework (Table 2), which was
118 developed and revised by two researchers (NF, KA). Initially, data were extracted using the
119 preliminary framework from three reviews, one from each of three policy areas, by the two
120 researchers independently. The results were reconciled, and a consensus reached on adaptations to
121 the framework. The adapted framework was applied independently to two new reviews in two
122 more policy areas. The final version of the data extraction framework (Table 2) was agreed and
123 applied to all the remaining identified reviews by one researcher. A sample of reviews in each policy
124 area was checked for accuracy by a second researcher.

125

126 Many reviews included studies not relating to population-level alcohol policy interventions (e.g.
127 studies measuring the effectiveness of policy interventions for other addictive substances or those
128 targeting an individual rather than a population). As in the Martineau review, data relating to these
129 studies were not extracted. Within the eligible reviews, data were extracted from relevant studies
130 of any design.

131

132 <Table 2 to be inserted here>

133 Data analysis

134

135 The level and quality of reporting of sex/gender data in the reviews was analysed summatively for
136 each policy area using the items included in the data extraction framework (Table 2). An overall
137 narrative synthesis of sex/gender-relevant findings was conducted, as well as for individual policy
138 areas.

139

140 **Results**

141 In total, 63 unique systematic reviews were identified and included (52 from the Martineau review,
142 and 11 from our updated search: see Figure 1). Table 3 shows the reviews categorised into 10
143 broad alcohol policy areas as defined by Martineau: three reviews covered two policy areas and one
144 review covered three policy areas.

145

146 <Figure 1 to be inserted here>

147
148 <Table 3 to be inserted here>

149
150 Level of consideration and availability of gender-relevant data (Table 4)

151
152 <Table 4 to be inserted here>

153
154 Most of the systematic reviews (87%, n=55) did not plan to conduct pooled analysis of intervention
155 effects by gender (Table 4). Seven of the 8 reviews which did plan to do so reported insufficient data
156 in the primary studies to enable such analysis (35–41). The eighth of these reported pooled effects
157 by gender in the area of higher education interventions (42), and a review of mass media
158 interventions did post-hoc pooled gender analysis (43) (see policy findings below).

159
160 Five reviews (8%) (37–39,41,44) ‘consistently’ provided information on baseline participation by
161 gender for the individual studies included in the review; four of these were conducted for the
162 Cochrane Library. Another review sometimes (45) and another rarely (46) provided such
163 information; the rest (89%, n=56) never did so.

164
165 More than half of the reviews (54%, n=34) provided no information on individual study findings
166 relating to the impact of the reviewed policy by gender, and there was wide variation in the location,
167 quality and level of detail of information provided for those which did (Table 4).

168
169 Gender-relevant findings from systematic reviews

170
171 Notwithstanding the gaps in reporting at review level, available information relevant to gender is
172 outlined below by policy area.

173
174 **Alcohol server setting/drinking environment (Table S1 – 6 reviews)**

175 Five reviews focused on policies to prevent alcohol-related harm or intoxication in or around
176 licensed premises (47–51), with between 13 and 26 studies in each; a further review included a
177 single study of warning labels (52). Across all six reviews, gender-relevant findings were reported
178 only for a single included study - of ‘Operation Drinksafe’ (a personalised risk-assessment in bars
179 involving the AUDIT screening tool and breath alcohol concentration measurement) – which
180 reported a greater reduction in AUDIT scores in women (p1588, Van Beurden et al., (2000) cited in
181 (47)).

182
183 **Sales Availability (Table S2 – 8 reviews)**

184 Eight reviews, including between 13 and 132 studies, considered policies limiting the availability of
185 alcohol through hours/days of sale , outlet density and/or purchase age (53–60). Gender-relevant
186 findings were reported for very few (15% or less) of the included studies in each review. Such data
187 were reported for 5 of 88 studies in one review (54), all of which suggested that increasing outlet
188 density was associated with increased consumption or harms (suicides, night-time crashes, assaults)
189 in males, less so in females. Another review (60) reported relevant findings for 10 of 69 studies, that
190 were more mixed suggesting either no effect or an enhanced effect in males.

191
192 In another review, relevant data were reported from one paper which found that following an
193 extension of hours of sale in Scotland, women’s drinking increased while men’s decreased (Knight &
194 Wilson (61) as cited in (59)). The same paper was cited in another review (56) as finding that the
195 introduction of Sunday alcohol sales in Scotland was associated with an increase in consumption
196 amongst males aged 18-45, with no significant change in women’s drinking..

197

198 Two reviews cited studies considering the effect of increased availability on assaults against women;
199 one suggested no effect (Norstrom & Skog, 2003 cited in (56)) and the other found a decrease in
200 assaults against women but could not conclude causation (Duailibi et al., 2007, cited in (62)).
201

202 No gender-relevant data were reported for the 132 studies included in the one review of minimum
203 drinking age laws (58).
204

205 **Illicit alcohol – 1 review**

206 No gender relevant data were reported for the 14 studies included in the review of policy options to
207 address illicit alcohol (63).
208

209 **Taxation/pricing (Table S3 – 4 reviews)**

210 Gender relevant findings were reported for fewer than 25% of the studies included in the reviews,
211 which included between 9 and 50 studies overall. No consistent differences in the direct effect of
212 increased price/taxation on consumption or harms in men compared to women were found.
213

214 Two reviews (46,64) reported findings from 5 studies suggesting that higher prices were associated
215 with decreased male but not female harms, including suicide (Markowitz, 2003, cited in (46,64)) and
216 sexually transmitted diseases (Grossman 2004; Carpenter 2005 both cited in (46); Markowitz et al.,
217 2005; Chesson et al., 2000 both cited in (64)). A sixth study found an association between higher
218 prices and improved use of birth control and condoms that was only significant in males (Grossman
219 & Markowitz, 2005 cited in (64)). One other study (Heeb et al., 2003 cited in (65)) found a greater
220 increase in male spirits drinking with a decrease in price.
221

222 Three studies found greater decreases in female than male drinking or harms with increased price
223 (Chaloupka & Wechsler, 1996; Makela et al., 2008; Academy of Medical Sciences, 2004, all in (46);
224 the latter also cited in (60)). A further study (Herttua et al.2008a, as cited in (60)) found that a tax
225 reduction increased alcohol deaths more in females than in males.
226

227 Finally, one study did not find any evidence that an overall increase in spirits consumption following
228 a decrease in price differed by gender (Kuo et al., 2003 cited in (65)).
229

230 There was some consistency in studies considering indirect impact with five studies, all cited in one
231 review (46), suggesting an increase in price would reduce rapes (Cook and Moore, 1993), child abuse
232 perpetrated by females (but not males) (Markowitz & Grossman, 2000), sexual assault against
233 women (Markowitz, 2000, second listing), unwanted pregnancies/teen abortions (Sen et al., 2003
234 also cited in (64)) and violence aimed at wives (Markowitz, 2000).
235
236

237 **Alcohol Marketing, Mass Media, Promotion, Counter-Advertising (Table S4 – 7 reviews)**

238 Of the 7 reviews, Booth et al. (46) included the most relevant findings: males were found more likely
239 to be exposed to or influenced by broadcast advertising in 7 studies (Aitken, 1988; Casswell & Zhang,
240 1998; Chen et al., 2005; Kelly, 1998; Sargent, 2006; Stacy, 2004; Zwarun, 2006; all cited in (46)),
241 notably for beer, and such exposure was associated with increased consumption of beer in two
242 studies (Collins et al., 2003; Connolly, 1994, both cited in (46)). Two studies found that point of sale
243 pricing/advertising may have increased female drinking to a greater extent than male drinking
244 (Saffer & Dave, 2003; Smith et al., 2005; both cited in (46)); 2 found no gender difference (Pederson,
245 2002; Yang & Raghbir, 2005; both cited in (46)). Two studies found a greater exposure of females
246 to billboard and print media advertising (Dring & Hope, 2001; Jernigan, 2004; both cited in (46)) and
247 2 studies suggested that the effects of advertising bans were generally larger for females (Saffer &
248 Dave, 2003; Saffer & Dave, 2006; both cited in (46)). One study found an association between

249 possession of alcohol promotional items and binge drinking in girls and a stronger association
250 between such possession and alcohol initiation in girls rather than in boys (Fisher, 2007, cited in
251 (46)). Finally, a different study found that males were more likely to have alcohol promotional
252 clothing items and that that was associated with a range of drinking variables (Workman, 2004, cited
253 in (46)).

254 The Jackson et al. review (60) was conducted by members of the same team as the Booth review
255 (46). It covered three policy areas, and rather than conducting a new review, reported on the earlier
256 findings from the Booth review, however it summarised the findings slightly differently. It reported
257 that younger age-groups and 15 to 17 year old girls experienced the greatest impact of alcohol
258 advertising, but did not highlight the finding from Booth that males may be more influenced by and
259 exposed to broadcast advertising.

260

261 **Drink-driving (Table S5 – 12 reviews)**

262 No two reviews reported gender-relevant information from the same primary studies of drink-
263 driving policy. Reported studies suggested that such interventions have more of an impact on males
264 than on females in reducing consumption: (Carpenter et al., 2007 cited in (36)); breath alcohol
265 concentration (Zwicker, 2007 cited in (35); Kloeden & McLean, 1997; 1994 cited in (36)); crash-
266 related hospital admissions (Hardes et al., 1985 cited in (66)); road traffic fatalities (Albalade et al.,
267 2006, cited in (36)); and insurance claims for crashes (Mercer et al., 1996 also cited in (66)). Other
268 studies suggested that females tended to be more compliant with drink driving laws (Timmerman et
269 al., 2003; Boots and Midford, 1999 both cited in (67); Kaplan and Prato, 2007 cited in (36)). A small
270 number of studies across the reviews involved male drivers only.

271

272 **School-Based Interventions (Table S6 – 17 reviews)**

273 There was no consistent evidence of gender differences in the effectiveness of school programmes
274 targeting alcohol. Across all the reviews, gender relevant findings were reported for 14 studies, of
275 which six suggested greater impact of the intervention in females, five suggested greater impact in
276 males, and three found no gender differences. There was limited evidence that males may have
277 responded better to classroom management interventions such as the 'Good Behaviour Game'
278 (Kellam et al., 2008 cited in (38)). However, the review-level evidence for the effectiveness of
279 school-based interventions was weak overall (4).

280

281 **Higher Education-Based Interventions (Table S7 – 5 reviews)**

282 There was no evidence to suggest gender differences in the effects of a range of higher-education
283 interventions focusing on alcohol. One meta-analysis (42) of 62 individual and group-level
284 interventions for first year college students found that gender was not a significant moderator for
285 alcohol consumption post-intervention.

286

287 **Interventions Targeting Families/Communities (Table S8 – 4 reviews)**

288 Reported review-level findings did not suggest a consistent gender difference in the efficacy of
289 family and community interventions: two cited studies found no significant moderation of effect by
290 gender (Brody, 2006, Haggerty, 2007, both in (39)); another study suggested a negative impact on
291 females only (Wiggins et al., 2009, cited in (68)); another a greater positive impact on males (Perry et
292 al., 2003, cited in (69)); and a final study found a greater positive impact on females (Spath et al.,
293 1999a cited in (39)).

294

295 Four trials of a female only intervention for daughters and their parents (mostly mothers) showed
296 signs of efficacy in the short to medium term (39) (p.12).

297

298 **Workplace Interventions (Table S9 – 4 reviews)**

299 Few relevant findings were reported and there was no clear evidence overall for any specific gender
300 differences from the studies cited in these reviews (41,45,70,71).

301

302

303 **Discussion**

304 Although there is widespread recognition that *“explicitly identifying to whom the evidence does or*
305 *does not apply, is necessary to formulate social policy initiatives... and to determine what*
306 *interventions are appropriate with particular populations”* (72), gender has not been well-reported in
307 reviews of population-level alcohol policy. Across 10 policy areas, and 63 reviews of population-level
308 alcohol policies, few or no reviews reported results by gender and some reported a lack of such data
309 in the primary studies. Notwithstanding the lack of data in the reviews, the information extracted
310 suggests that there are likely to be gender differences that are relevant to policy effectiveness in
311 some areas.

312

313 Policy Implications

314

315 Possible gender differences exist in the area of alcohol marketing/mass media interventions, where
316 young men may be more affected by broadcast advertising especially for beer; and young women by
317 billboard/print advertising. If broadcast advertising was subjected to restrictions (as has been
318 suggested (73) p19), which were not applied to print advertising, that may reduce advertising
319 exposure to a greater extent in young men and requires further investigation.

320

321 In school and family interventions, a number of studies evaluated single-gender interventions aimed
322 at daughters (along with a parent, mainly their mothers) cited in (37,38). These may reinforce
323 gender stereotypes and inequality, for example, by invoking even by their existence, a sense of
324 drinking being somehow more problematic, shameful or inappropriate for girls, than for boys (see de
325 Visser (74,75)). It has been suggested that mass media campaigns focusing on ‘binge drinking’ can
326 fall into this category or engage in ‘victim-blaming’ in relation to sexual assaults sustained after
327 drinking alcohol (76). No measures of this potential unintended outcome were reported in any of
328 the included reviews.

329

330 While there were no consistent trends in the many gender differences reported in the impact of
331 increased alcohol prices or taxation on consumption or harms, studies did consistently report that
332 such interventions may have reduced harms such as assaults. Importantly, these indirect outcomes
333 were not reported in reviews for eight of the ten policy areas, despite an increasing focus on ‘harm
334 to others’ from alcohol (77,78).

335

336 Research implications

337 This review suggests a significant gap in the literature, which is not unusual. Similar ‘gender
338 blindness’ has been reported in research in other health areas (79–81) and is both a symptom of,
339 and contributor to, wider gender inequality (22–24). More basic research is required to better
340 consider, measure and report on the effectiveness of alcohol policy interventions by gender, as well
341 as potential unintended consequences such as gender stereotyping, and indirect effects including
342 ‘harm to others’.

343

344 Current developments may improve the analysis and reporting of sex and gender in health research.
345 Many research and governmental organisations require sex/gender issues to be addressed in
346 research proposals and policy initiatives (72). In addition, a group of science editors have consulted
347 on common standards for reporting of sex/gender differences in scientific research (31). Specific
348 guidance is available on how to address sex and gender issues in systematic reviews of policy
349 interventions (82).

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It remains to be seen how transformative initiatives to incorporate a gendered perspective will be: long-standing efforts to mainstream gender into policy-making (83) have faced challenges (84) and criticism for having a narrow ‘technocratic’ focus on processes (such as gender impact assessment (85)) while failing to achieve societal change (25,28). This review focused only on gender, however it is important to acknowledge that gender inequality intersects with other forms of inequality (including economic, racial, sexual orientation) in complex ways (23,30). These interactions can have important implications for alcohol-related harms (17,86,87), and require a broader focus in both research and policy (22,29).

Strengths and limitations

This umbrella review synthesizes a large amount of evidence about the impact of population-level alcohol policy interventions on males and females, and adds to the current literature on alcohol and gender, which focuses predominantly on consumption and consequences (7). Its value is constrained by a lack of focus on, and low levels of reporting of, gender-relevant data at review level, either due to gaps in primary studies, selective reporting in the reviews, or more likely both. This makes it difficult to speculate on the reasons for the differences found or to assume their wider transferability. Different reviews reported different aspects of the same primary studies and working from reviews impeded judgement of the quality of the primary evidence. Even reviews which sought to analyse by gender were largely unable to do so, suggesting that further study of the primary literature may not yield results that are any more conclusive.

Conclusions

Gender differences in experiences of direct and indirect harm from alcohol are well established (87–89) but appear to be rarely considered in policy reviews. Available evidence from systematic reviews suggests that there may be plausible and important gender differences in the impact of population-level alcohol policy interventions which require further consideration in research and policy, particularly in the area of advertising controls and mass media campaigns.

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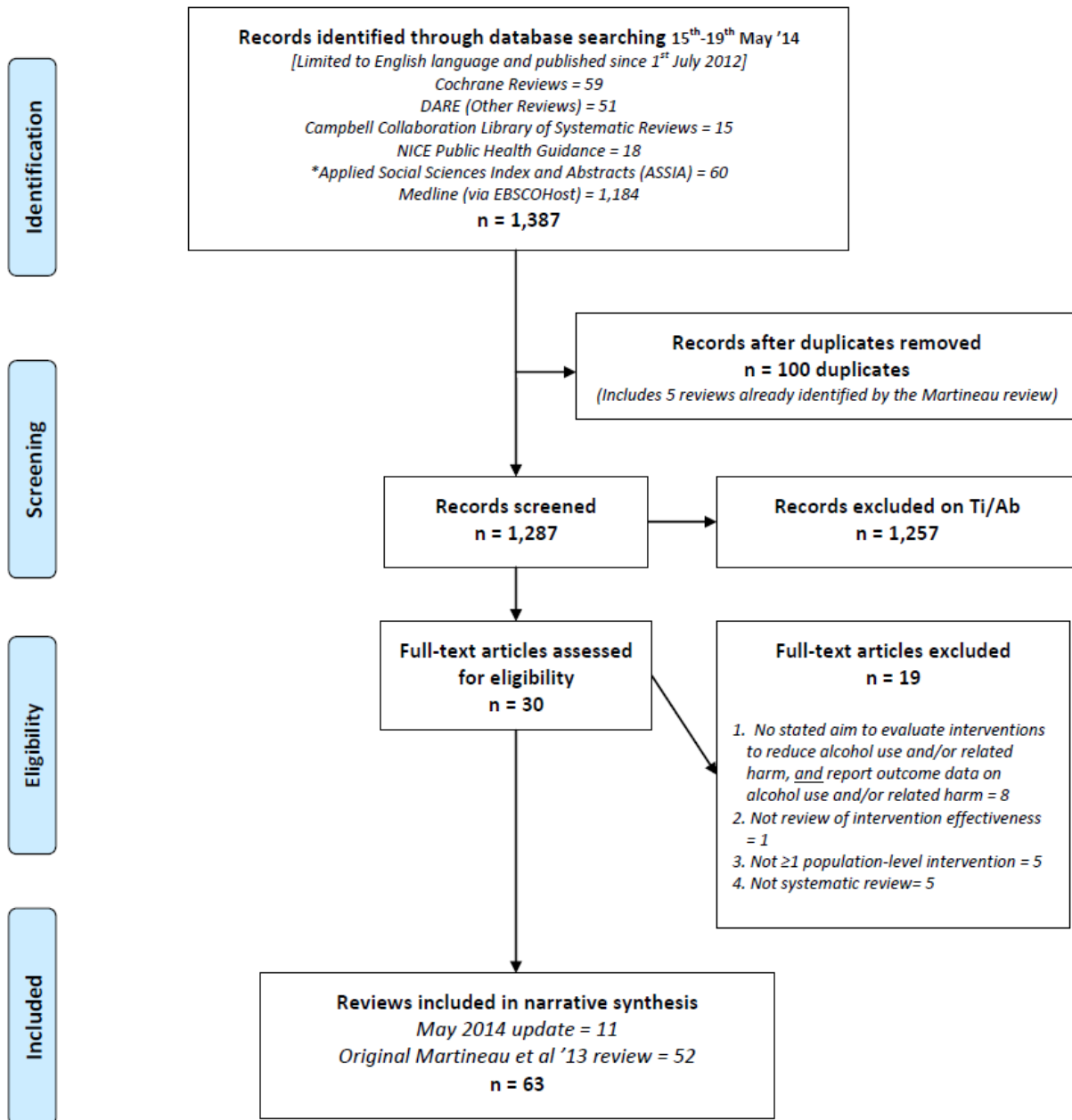
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Figure 1: Flow diagram of the review screening process updating the searches from Martineau *et al.* 2013



*Substitution database for Social Policy and Practice

Table 1: Search Strategy from Martineau et al., 2013 (4).

Alcohol terms	<u>AND</u>	Policy settings and interventions terms: <ul style="list-style-type: none"> • sexual or risky behaviour • roads and transport • public space • domestic • workplace • school • leisure • social • availability • affordability • acceptability 	<u>AND</u>	Population-level terms	<u>AND</u>	Systematic review terms
		<u>OR</u> Outcomes terms: <ul style="list-style-type: none"> • mental harm • communicable diseases • unintentional injury and accidents • violence and crime • employment • economic • environment • social 				
		<u>OR</u> Specific interventions terms				
<p>See Appendix A. 'Supplementary Data' of the Martineau review for the complete search strategy. Online at http://dx.doi.org/10.1016/j.vpmed.2013.06.019</p>						

Table 2: Final Framework for Data Extraction from Reviews

Item	Item description and/or instructions/response options
Study Details	
A. Review Title	Brief reference e.g. Jackson et al., 2010
B. Citation	Full citation.
C. Relevant studies	Number of relevant studies/total number of studies in review. Studies deemed relevant if they relate to a population-level alcohol policy intervention as defined by the Martineau review, and of any design.
Gender focus of review	
D. Did this review have a major and a priori focus on gender equity?	If so, enter 1, 2 or 3 to indicate which type, using criteria from Welch et al., 2013 (34) (p2): Type 1 Reviews assess effects of interventions in disadvantaged populations; Type 2 Reviews assess effects of interventions aimed at reducing social gradients across populations; Type 3 Reviews have a major focus on equity and are “designed to assess the effects of interventions not aimed at reducing inequity but where it is important to understand the effects of the intervention on equity, positive or negative”.
E. Was post-hoc analysis conducted of the effects of the intervention by gender?	Yes/No or N/A (not applicable) if a priori analysis by gender was planned.
F. Extract all gender-relevant data except from single-gender studies.	Cut and paste any data on gender if relevant to population level alcohol interventions or policy.
G. Extract all data from single-gender studies.	Cut and paste any data from single gender studies if relevant to population level alcohol interventions or policy.
Pooled data for all studies in review	
H. Is pooled baseline participation by gender reported?	Yes/No
I. If yes to 8, extract data	Provide data or N/A
J. Were pooled intervention effects by gender reported?	Yes/No
K. If yes to 10, extract data	Provide data or N/A
Data provided for individual studies in review Excluding single gender studies & only including data from population-level alcohol studies.	
L. Baseline participation reported by gender in table for individual studies	Consistently/Mostly/Sometimes/Rarely/Never
M. Intervention effects reported by gender for individual studies in the study table or narrative?	No/Table/Narrative/Both
N. Quality of data reported for intervention effects by gender for individual studies	None (if qualitative only) Poor (if very basic quantitative e.g. before and after measures given only) Good (if quantitative with effect size or p value or confidence interval) Variable (if different quality of reporting across different studies within the review)
O. Notes	

Table 3: Policy areas and reviews included

Policy Area	Types or examples of interventions included:	Reviews
1. Alcohol server setting	Drinking environment interventions including server training, warning labels etc.	(47–52)
2. Sales Availability	Restricting opening hours/days, outlet density, legal drinking age, monopolies.	(53–56,58–60,62)
3. Illicit Alcohol	Any interventions to tackle illicit alcohol.	(63)
4. Taxation/Pricing	Changing tax or price of alcohol.	(46,60,64,65)
5. Mass media/promotion	Advertising, mass media, promotion, counter-advertising, social marketing.	(43,46,60,90–93)
6. Drink-driving	Increased police patrols, sobriety checkpoints, blood alcohol limits etc.	(35,36,66,67,90,94–100)
7. School	Pre-school/school setting interventions e.g. education, life skills etc.	(37,38,40,98,101–113)
8. Higher education	e.g. regulation, media campaigns, social norms, multicomponent interventions.	(42,44,114–116)
9. Family and community	e.g. mailed literature, community wide campaigns.	(39,40,68,69)
10. Workplace	e.g. mandatory testing, staff training, mail-outs, peer-referral programmes.	(41,45,70,71)

Table 4: Review-level reporting of gender by policy area

	Data Extraction Item [Reference Letter from Table 2 where applicable]					
	Number of reviews	Number of reviews with gender focus/Number of reviews with post-hoc analysis by gender [D, E]	Number of reviews which pooled data by gender [H, I, J, K]	Frequency of baseline participation reported by gender for individual studies (number of reviews) [L]	Number of reviews with intervention effects reported by gender in table only/in narrative only/in both table and narrative [M]	Quality of data reported for gender intervention effects where reported (number of reviews) [N]
1. Alcohol server setting	6	0/0	0	Never (6)	1/0/0	Poor (1)
2. Sales Availability	8	0/0	0	Never (8)	0/1/4	Poor (2) Good (1) Variable (2)
3. Illicit Alcohol	1	0/0	0	Never (1)	0/0/0	
4. Taxation/Pricing	4	0/0	0	Rarely (1) Never (3)	1/1/2	Good (1) Variable (3)
5. Mass media/promotion	7	0/1	1	Sometimes (1) Never (6)	0/0/4	Poor (1) Good (1) Variable (2)
6. Drink-driving	12	2/0	0*	Never (12)	3/0/2	Poor (3) Good (2)
7. School	17	2/0	0*	Consistently (2) Never (15)	4/0/5	Poor (1) Good (8)
8. Higher education	5	1/0	1	Consistently (1) Never (4)	0/0/0	
9. Family and community	4	2/0	0*	Consistently (1) Never (3)	0/1/2	Poor (1) Good (2)
10. Workplace	4	1/0	0*	Consistently (1) Sometimes (1) Never (2)	0/1/1	Poor (1) Variable (1)
Totals for unique reviews**	63	8/1	2	Consistently (5) Sometimes (2) Rarely (1) Never (56) ^λ	8/4/17	Poor (10) Good (14) Variable (5)

**In the Type 3 reviews which planned to focus on gender, subgroup analysis by gender was not possible due to lack of suitable data.*

*** The totals are sometimes different to the sum of the data in columns as some reviews covered more than one policy area.*

^λ n=64 because the frequency of reporting was rated differently for two policy areas within the same review.