

EPIDEMIOLOGY

Alcohol Use Among Female Sex Workers and Male Clients: An Integrative Review of Global Literature

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Abstract — **Aims:** To review the patterns, contexts and impacts of alcohol use associated with commercial sex reported in the global literature. **Methods:** We identified peer-reviewed English-language articles from 1980 to 2008 reporting alcohol consumption among female sex workers (FSWs) or male clients. We retrieved 70 articles describing 76 studies, in which 64 were quantitative (52 for FSWs, 12 for male clients) and 12 qualitative. **Results:** Studies increased over the past three decades, with geographic concentration of the research in Asia and North America. Alcohol use was prevalent among FSWs and clients. Integrating quantitative and qualitative studies, multilevel contexts of alcohol use in the sex work environment were identified, including workplace and occupation-related use, the use of alcohol to facilitate the transition into and practice of commercial sex among both FSWs and male clients, and self-medication among FSWs. Alcohol use was associated with adverse physical health, illicit drug use, mental health problems, and victimization of sexual violence, although its associations with HIV/sexually transmitted infections and unprotected sex among FSWs were inconclusive. **Conclusions:** Alcohol use in the context of commercial sex is prevalent, harmful among FSWs and male clients, but under-researched. Research in this area in more diverse settings and with standardized measures is required. The review underscores the importance of integrated intervention for alcohol use and related problems in multilevel contexts and with multiple components in order to effectively reduce alcohol use and its harmful effects among FSWs and their clients.

INTRODUCTION

In addition to its adverse effects on mental health disorders, injury and death (Room et al., 2005), alcohol use is among the most prevalent behaviors associated with HIV and other sexually transmitted infections (STIs) (Cook and Clark, 2005; Kalichman et al., 2007b; Hendershot and George, 2007; Plant, 1990), although causality has not been established (Shuper et al., 2010). Problem drinking requires population-based primary prevention and structural interventions to enhance individual-level treatment programs (Room et al., 2005; Blankenship et al., 2000; Bryant, 2006). Alcohol use is global and context-specific; a better understanding of drinking contexts is of worldwide importance (Bryant, 2006; Jernigan et al., 2000).

The social context of alcohol use describes individual motivational and situational factors (Beck et al., 2008) and social/environmental milieus, including participants, place, time and reasons for drinking. Social and environmental forces include availability of alcohol (Gruenewald et al., 2002), policies related to alcohol availability (Gruenewald et al., 2002) and drinking norms in network, workplace and neighborhood (Ahern et al., 2008; Ames et al., 2000; Barrientos-Gutierrez et al., 2007; Thombs et al., 1997). Certain drinking contexts and/or situations increase alcohol-related risks (WHO, 2008). Drinking in the context of a sexual encounter is more closely associated with unprotected sex than is the frequency or quantity (Kalichman et al., 2007a). Intervening on environmental and contextual influences may foster substantial and wide-reaching changes in drinking behavior (Ahern et al., 2008).

Context particularly matters for alcohol use in commercial sex. Alcohol use has long been recognized as an important aspect of commercial sex, which involves both sex workers and their clients (Plant et al., 1989, 1990). As a hidden and lucrative industry, commercial sex is increasing globally (UN-

AIDS, 2002) and has social characteristics that shape drinking context (Aral et al., 2003; Choi and Holroyd, 2007; Chiao et al., 2006), including individual attributes (personal knowledge, attitudes and skills) and complex interactions among individual, relational, situational, institutional and environmental factors.

Women's involvement of alcohol and commercial sex may have profound life-course impacts on health and intergenerational health and care (Mårdh et al., 1999). A broad understanding of drinking contexts is a stepping stone to inform the development of intervention and prevention programs to effectively reduce its harmful effects among FSWs. Despite recognition of the need for contextualized approaches to research on women, alcohol and work (Ames and Rebhun, 1996; Wilsnack and Wilsnack, 1992), they have been missing from systematic review investigating alcohol use in the context of commercial sex.

The aim of this review is to examine and synthesize the findings in the global literature regarding the patterns, contexts and impacts of alcohol use associated with commercial sex, focusing on FSWs and male clients. A socio-ecological framework (Morojele et al., 2006) concerning social contexts at individual, occupational and environmental levels was employed.

METHODS

Inclusion criteria

The present review integrates studies in quantitative and qualitative methodologies (Whittemore and Knafl, 2005). A comprehensive literature search was conducted to identify studies: (i) peer-reviewed and published in English-language journals from 1980 to December 2008, (ii) related to FSWs or male clients and (iii) reporting alcohol consumption.

Data source

We searched the literature in January 2009 using the key words 'female', 'women', 'sex workers', 'prostitutes', 'entertainment workers', 'prostitution', 'commercial sex', 'sex work', 'sex industry', 'sex trade', 'sell sex', 'exchange sex', 'alcohol', 'drinking', 'drunk', 'drunkenness' and 'intoxication' in the PubMed, EBSCO, JSTOR, the Cochrane Database of Systematic Reviews, PsycInfo and FirstSearch electronic databases; 62 articles meeting inclusion criteria were identified. Ten articles were excluded because of inadequate measurement of alcohol use. The reference lists of the remaining 52 articles and recent alcohol-related reviews (Fisher et al., 2007; Cook and Clark, 2005; Kalichman et al., 2007b; Plant et al., 1989) were then hand-searched, yielding 18 more articles and resulting in 70 articles.

Structure of data presentation

Studies were organized by sample (FSWs or male clients) or research methodology (quantitative or qualitative method). Five articles containing both FSWs and male clients and/or using both methods were presented as separate studies, which resulted in a total of 76 studies. Of the 52 quantitative studies for FSWs (Table 1), 30 assessed the patterns, contexts and/or impacts of alcohol consumption and 22 reported the patterns of alcohol intake only. Twelve quantitative studies were conducted among male clients (Table 2). Twelve qualitative studies included six among FSWs, four among male clients and two among both FSWs and male clients (Table 3).

We review general trends, patterns (i.e. prevalence, frequency, quantity, volume and problem drinking), situations and contexts, and impacts of alcohol use. Because level of societal economic development influences individual drinking behavior (Rahav et al., 2006), study countries were characterized into low- and middle-income countries or high-income countries, following the definition of the World Bank (World Bank Annual Report, 2006).

RESULTS

Period and geographic trends

There was an increase in the quantity of publications over time: four in the 1980s, 15 in the 1990s and 51 in the 2000s; Asia was the source of 26 articles (37%), North America 15 (21%), Africa 11 (16%), Europe nine (13%), Australia four (6%), South America three (4%) and the Middle East two (3%). Nearly 60% of articles were from low- and middle-income countries.

Patterns of alcohol use

As shown in Table 1, most FSWs drank frequently and drinking patterns varied, depending on samples, measurements of alcohol use and recall periods. Among studies that reported the drinking 'prevalence', 81.2–100% of FSWs (median 96%) reported ever using alcohol (Surratt and Inciardi, 2004; Surratt, 2007; Weber et al., 2002); 73.3–74.8% (median 74.1%) of FSWs used alcohol in the past month (Surratt, 2007; Inciardi and Surratt, 2001). A study in Scotland reported that 92% of FSWs used alcohol in the last week (Plant et al., 1990). In terms of the drinking 'frequency', 12–78% of FSWs (median 33%) consumed alcohol daily

(Peltzer et al., 2004; Philpot et al., 1989; Gossop et al., 1994; Estebanez et al., 1997; Inciardi and Surratt, 2001; Inciardi et al., 2005; Surratt and Inciardi, 2004; Wechsberg et al., 2005; Yadav et al., 2005; Munoz et al., 2006; Pell et al., 2006); 24–92% of FSWs (median 47.9%) reported weekly use (Plant et al., 1990; Folch et al., 2008; Witte et al., 1999; Peltzer et al., 2004; Wechsberg et al., 2005); and 45.9–75% of FSWs (median 72.1%) reported monthly use (Hagan and Dulmaa, 2007; Inciardi and Surratt, 2001; Surratt, 2007; Kayembe et al., 2008).

Several studies reported the drinking 'quantity' among FSWs in terms of 'unit' or pub measures of drinks. Most FSWs drank more than the recommended level of alcohol consumption for women (e.g. 14 units per week or 3 units per occasion) (Patient UK, 2009). In a study among FSWs in Scotland, the unit of alcohol use (e.g. 10 ml or 8 g of pure ethanol)¹ was measured as half a pint of ordinary beer/lager/stout/cider, a normal unit/pub measure of spirits, or a glass of wine (Plant et al., 1990). Average 'quantity' among FSWs was 13.9 units during most recent drinking occasion; and the average 'volume' of alcohol consumed previous week was 48.1 units (Plant et al., 1990). With a similar definition of the unit (a half pint of normal strength beer, one glass of wine or a pub measure of spirits), FSWs in England consumed an average of 6 units of alcohol daily; and 67% drank >14 units per day with the maximum consumption at 45 units per day (Gossop et al., 1994; Gossop et al., 1995).

In addition to high drinking quantity/volume, 'problem drinking' in other measures were prevalent among FSWs. A study in Montreal, Canada reported that 65% street-based young FSWs became inebriated at least 1 day during the past 6 months (Weber et al., 2002); studies in China reported that one-third of FSWs in a rural county became inebriated monthly in the past 6 months (Hong et al., 2007a), and 65% of female migrants who sold sex were intoxicated at least once in the prior month (Yang et al., 2005a); in a study in Papua New Guinea, 17% of FSWs reported being inebriated (Mgone et al., 2002); and in a study in San Francisco, 11% reported frequent inebriation (Silbert et al., 1982). Thirty-three percent of FSWs in Kenya were binge drinkers with over five drinks during at least one occasion last month (Chersich et al., 2007).

Most male clients of FSWs drank frequently and heavily, and 'problem drinking' was prevalent (Table 2). A study on male clients attending public STD-clinics in Singapore reported that 45.5% drank over weekly (Wee et al., 2004). In a study among unmarried men in northern Thailand, 69% visited FSWs in the past 6 months, 76% of whom drank during their most recent visit (VanLandingham et al., 1993). One study in Australia reported that 33.6% of male clients drank >28 standard drinks a week (one standard drink has 10 g of ethanol; Rissel et al., 2003). One study in the Netherlands reported that the average alcohol intake of clients per visit was 4.8 glasses (10–14 cm³ alcohol per glass; de Graaf et al., 1995). In a study in Zimbabwe, >50% of FSWs reported that their most recent client was inebriated (Wilson et al., 1989).

¹ The definition of the standard unit of alcohol use varies across countries. For example, a unit of alcohol use was defined as 14 grams of ethanol in the U. S. and 8 grams of ethanol in the UK. <http://www.icap.org/PolicyIssues/DrinkingGuidelines/StandardDrinks/tabid/126/Default.aspx>.

Table 1. Summary of quantitative studies on alcohol use of female sex workers, 1980–2008

| Author | Sample | Sampling | Alcohol measures and patterns |
|----------------------------------|---|--|---|
| Silbert <i>et al.</i> , 1982 | 200 juvenile and adult FSWs in San Francisco, USA 60% ≤16 years | Street youths and adults | Became inebriated (11% herself, 58% parents, 19% siblings) |
| Bagley and Young, 1987 | 45 ex-FSWs and 45 controls, Canada | Agency-based | Drinking problems during entry to sex work (parents 53%, fathers 49%, mother 13%, other relatives 18%) |
| Philpot <i>et al.</i> , 1989 | 277 FSWs in Sydney, Australia | Clinic-based | 78.7% of FSWs drank, 21.2% of drinkers drank at least 2 drinks per day |
| Wilson <i>et al.</i> , 1989 | 100 FSWs in Harare, Zimbabwe | Bar-based | Her most recent client was inebriated (50%) |
| Plant <i>et al.</i> , 1990 | 101 FSWs in Edinburgh, Scotland | Snowballing | Alcohol use with clients (80%), alcohol use last week (92%), 13.8 units during most recent drink occasion, 48.1 units last week. FSWs reported clients under the influence of alcohol (60%) |
| Chakraborty <i>et al.</i> , 1994 | 450 FSWs in Calcutta, India | Random sample of a census in a red-light area | Alcohol being taken regularly or quite often (81.11%) |
| Gossop <i>et al.</i> , 1994 | 51 FSWs in south London, England | Privileged access interviewers | 22% used alcohol daily, 67% drank >14 units per day, with the highest level of consumption at 45 units per day |
| de Graaf <i>et al.</i> , 1995 | 127 FSWs in the Netherlands | Workplace | Before or during sex work: alcohol use sometimes (44%), average 3.7 glasses of alcohol (SD = 3.0), under the influence of alcohol (17%) |
| Gossop <i>et al.</i> , 1995 | 51 FSWs in south London, England | Privileged access interviewers | An average of 6 units of alcohol daily, 76.5% reported using alcohol before or while seeing clients |
| Estebanez <i>et al.</i> , 1997 | 1095 FSWs in Spain | Workplace-based | Drink alcohol daily (31.1%) |
| Nadon <i>et al.</i> , 1998 | 45 adolescent FSWs, 37 controls, Winnipeg, Canada | Community-based | Parental excessive drinking (77%), adolescent alcohol use (82%) |
| Persaud <i>et al.</i> , 1999 | 124 FSWs in Guyana | Street- and brothel-based | Regular alcohol consumption while looking for clients (88%) |
| Witte <i>et al.</i> , 1999 | 101 FSWs in New York City, USA | A purposive sample among street FSWs | Alcohol use at least weekly (48.5%), living with someone with drug or alcohol problems (35.6%) |
| Witte <i>et al.</i> , 2000 | 96 FSWs in New York City, USA | Street sex workers | Current alcohol use (50%) |
| Chaplinskas and Mardh, 2001 | 73 FSWs in Vilnius City, Lithuania | Railway station | Abuse alcohol (one-third) |
| Inciardi and Surratt 2001 | 708 cocaine-dependent FSWs in Miami, Florida | Street and treatment programs | Ever used alcohol (96%), median age at onset of alcohol (15), used alcohol in last 30 days (75%) and daily (35%) |
| Chege <i>et al.</i> , 2002 | 385 FSWs in Kibera slum, Nairobi, Kenya. | Recruited from peer leaders | Use of alcohol (35%) |
| Mgone <i>et al.</i> , 2002 | 407 FSWs in two cities, Papua New Guinea | Peer-mediated community outreach | Being inebriated (17%) |
| Rogers <i>et al.</i> , 2002 | 69 FSWs in Beijing, China | Venue-based | Alcohol use during sex work (42% by FSWs, 32% by clients) |
| Weber <i>et al.</i> , 2002 | 88 FSWs in Montreal, Canada, aged 14–25 | Street youths | Ever use of alcohol (100%), during the past 6 months ever became inebriated at least for 1 day (65%), under influence of drugs/alcohol during sex (95%) |
| Cwikel <i>et al.</i> , 2003 | 55 FSWs in Israel | Brothel-based | Had a problem with alcohol (24%) |
| Du Mont and McGregor, 2004 | 96 (21%) FSWs of 462 sexual assault victims, Canada | Emergency department-based | Using alcohol and/or marijuana prior to being assaulted (22.9%) |
| Kumar, 2003 | 135 FSWs in Chennai, South India | Ethnographic mapping, quota sampling procedure | Alcohol use among FSW (35%) and before sex (52%), use alcohol with regular partner (72%) |
| Lavreys <i>et al.</i> , 2003 | 736 FSWs in Mombasa, Kenya | Clinic-based | Use of alcohol (78%) |
| Pedersen and Hegna, 2003 | 32 of 5316 girls (0.6%) in Oslo, Norway sold sex, aged 14–17 | School-based sampling 116 of 5512 boys (2.1%) sold sex | Alcohol exposure at parental home (1.84 for boys, 1.94 for girls), Rutgers alcohol problem index (2.17 for boys, 2.22 for girls) |
| Raut <i>et al.</i> , 2003 | 867 FSWs in Kolkata, India | Community-based | Alcohol use either alone or with the clients (61.1%) |
| Zachariah <i>et al.</i> , 2003 | 1817 FSWs in Thyolo District, Malawi | STI mobile clinic | Among 374 FSWs having sex during the STI symptomatic period, indulgence in alcohol (16.6%) |
| Jeal and Salisbury, 2004 | 71 FSWs in central Bristol, England | Street-based, by kerb crawling and by word of mouth | Current or recent drug or alcohol dependency problems (100%) |
| Lung <i>et al.</i> , 2004 | 58 adolescent FSWs in Taiwan | Living at a halfway house | Alcohol use (42%) |
| Peltzer <i>et al.</i> , 2004 | 75 FSWs in Limpopo, South Africa | Targeted sampling | Drink alcohol daily (33.3%) and at least once a week (36.2%) |

(Continued)

Table 1. Continued

| Author | Sample | Sampling | Alcohol measures and patterns |
|----------------------------|--|---|--|
| Potterat et al., 2004 | 1969 FSWs in Colorado Springs, Colorado, open cohort | Community (police and health department surveillance) | Alcohol-related mortality, among 111 deaths, 2 cases of acute intoxication, 8 cases of chronic alcoholic cirrhosis |
| Surratt and Inciardi, 2004 | 485 drug-involved FSWs in Miami, Florida | Street-based, traditional targeted sampling | Ever alcohol use (96%), alcohol using daily in past month (36.1%) |
| DeRiviere, 2005 | 62 FSWs in Winnipeg, Canada | Street-based | Addict to alcohol or drugs prior to involvement into sex trade (1/3), then majority switch from alcohol to more harmful substances |
| Gare et al., 2005 | 211 FSWs in Papua New Guinea | Venue-based | 67% of raped FSWs were under the influence of alcohol, 27% were under the influence of alcohol and marijuana |
| Inciardi et al., 2005 | 407 drug-involved FSWs in Miami, Florida | Street-based, traditional targeted sampling strategies | Ever using alcohol (97%), alcohol using daily in past month (78%) |
| Wechsberg et al., 2005 | 93 FSWs in Republic of South Africa | Street outreach, targeted sampling plan | Alcohol as the first substance ever used (26%), used alcohol by age 17 (51%), 18% used alcohol daily in past month, 24% used alcohol at least twice a week |
| Yadav et al., 2005 | 466 FSWs in Nairobi, Kenya | Clinic-based | Use alcohol daily: home-based (35.3%), nightclub (53.3%) and bar-based (60.0%) |
| Yang et al., 2005 | 40 female migrants sold sex, China | Quota sampling of 8 occupation groups | Intoxicated with alcohol at least once last month (65%) |
| Chiao et al., 2006 | 1114 FSWs aged 15–54, in 4 southern islands, Philippines | Entertainment venues (67% from bar, 26% from non-bar and 8% from streets) | Alcohol use before sex (19%), sex with intoxicated clients (37%), frequency of drinking (3.06, 4-point Likert scale) and with clients (2.83, 5-point Likert scale) |
| Inciardi et al., 2006 | 586 drug-involved FSWs in Miami, Florida | Targeted sampling strategies | Lifetime alcohol use (96%) |
| Munoz et al., 2006 | 613 FSWs in Isla Margarita, Venezuela | Street venues and clinics | 12% drank more than one drink per day |
| Pell et al., 2006 | 91 and 165 Asian FSWs in Sydney in 1993 and 2003 | Clinic-based | 32.3% Chinese and 52.2% Thai reported alcohol use, and 13% used alcohol daily |
| Chersich et al., 2007 | 719 FSWs in Mombasa, Kenya | A community-based study, snowball sampling | ≥5 drinks on at least once in the previous month (33.0%), among them: having sex while inebriated last week (82.4%) and age at onset of alcohol (20.9) |
| Hagan and Dulmaa, 2007 | 179 FSWs in Mongolia | Worksite, snowballing | Alcohol use more than once a month (45.9%) |
| Hong et al., 2007a | 454 FSWs in a rural county, China | Establishments, ethnographic targeted sampling | Became inebriated at least once a month in the past 6 months (one-third) |
| Markosyan et al., 2007 | 98 FSWs in Armenia | A convenience sample of street-based FSWs | Alcohol use prior to sex (50%), forced by clients to use alcohol prior to sex last week (24%) |
| Surratt, 2007 | 101 migrant FSWs in the US Virgin Islands | Alcohol establishments, targeted sampling | Ever using alcohol (81.2%), drinking in past month (73.3%), using alcohol only in past month (57.4%) |
| Wang et al., 2007 | 454 FSWs in a rural county, China | Establishments, ethnographic targeted sampling | Having alcohol before having sex with clients (29.4%) |
| Bautista et al., 2008 | 1550 FSWs in Argentina, Bolivia, Ecuador and Uruguay | Convenient sample from working locations and streets | Use of alcohol (73.8%) |
| Folch et al., 2008 | 357 immigrant FSWs in Catalonia, Spain, 2005 | Community-based, convenience-stratified sample | Use alcohol one or more times a week (47.9%) |
| Jung et al., 2008 | 113 FSWs in Korea | Shelter-based | Alcohol use history (11.42 years) |
| Kayembe et al., 2008 | 2638 FSWs the provincial capital cities in Congo | Time location sampling, systematic random selection | Alcohol use at least once during preceding 4 weeks (70.9%) |

Studies were presented in the tables in the order of publication years (descending) and authors' names alphabetically. FSWs, female sex workers; STI, sexually transmitted infections; STD, sexually transmitted diseases

Contexts of alcohol use

Institutional and occupation-related use. FSWs drink higher levels of alcohol use in alcohol-selling or alcohol-serving venues. 'Indirect' sex workers (e.g. beer girls and bar girls) were hired to promote and sell alcoholic beverages in bars and clubs through drinking with clients, and may use these establishments to identify their clients and trade sex to supplement their incomes (Harcourt and Donovan, 2005). In the Netherlands, FSWs in clubs reported drinking more than those working in the street, home, brothel and window; two-thirds gained earnings from sale of alcoholic beverage (de

Graaf et al., 1995). In Uruguay, FSWs in discos/bars reported higher drinking than those in the street and brothels (Bautista et al., 2008). In Kenya, daily or binge drinking was more prevalent among FSWs working in bars or nightclubs than other sites (Yadav et al., 2005; Chersich et al., 2007).

Although observed differential patterns by workplace may be associated with availability, accessibility or acceptability of alcohol in specific locations, other potential explanations exist. One qualitative study at Zambia reported that street-based FSWs did not drink alcohol while working, whereas nightclub-based FSWs did (Agha and Nchima, 2004). Street-

Table 2. Summary of quantitative studies on alcohol use of male clients of female sex workers, 1980–2008

| Author | Sample | Sampling | Alcohol measures and patterns |
|------------------------------------|--|--|--|
| Celentano <i>et al.</i> , 1993 | 81.2% of 2417 men aged 19–23 ever visited FSWs in northern Thailand | 2 military bases | Alcohol use among those never visited FSWs (66.3%) and frequent visitors (95.2%) |
| VanLandingham <i>et al.</i> , 1993 | 69% of 1472 unmarried men ever visited FSWs in the past 6 months in Thailand | University, military and work | Drank at the most recent visit to FSWs (76%) |
| de Graaf <i>et al.</i> , 1995 | 91 male clients in the Netherlands | Workplace-based | Under the influence of alcohol among clients (14%), alcohol use sometime (29%), average alcohol use on the occasion to visit FSWs 4.8 glasses (SD 0.52) |
| Fajans <i>et al.</i> , 1995 | 50 male clients to FSWs in Bali, Indonesia | Workplace-based | Drinking alcohol before having sex with FSWs (56%) |
| Lim <i>et al.</i> , 1995 | 541 male patients, Belfast, Northern Ireland | Hospital-based sampling | Purchase sex services under the influence of alcohol (88%) |
| Celentano <i>et al.</i> , 1998 | 834 male army conscripts who visited a brothel, Thailand | Military bases | Drinking alcohol during their last visit to a brothel |
| Kumar, 2003 | 100 male clients in Chennai, South India | Ethnographic mapping, quota sampling procedure | Alcohol use among clients (43%) and before sex (43%) |
| Rissel <i>et al.</i> , 2003 | 15.6% of 10,173 men ever paid for sex, Australia | Random digit dialing | 33.6% male clients had more alcohol use than 28 standard drinks a week |
| Wee <i>et al.</i> , 2004 | 229 male patients in Singapore paying for sex | Public STD clinic-based | Alcohol use (74.9%), drink more than once a week (45.5%), alcohol impaired decision making score among inconsistent and consistent condom users (3 vs 2) |
| Madhivanan <i>et al.</i> , 2005 | 92% of 1741 men reported sex with FSWs in Mumbai, India | Hospital-based | Sex under the influence of alcohol (66%) |
| Sivaram <i>et al.</i> , 2007 | 14% of 118 wine shop male patrons in Chennai, India recently visited FSWs | Venue-based, systematic sampling | 58% of 118 patrons used alcohol 5 or more times in the past 10 sexual encounters |
| Ford and Chamrathirong, 2008 | 1603 seafarers and 1139 other male migrants in Ranong and Trat, Thailand | Workplace-based | Frequency of intoxication before having sex: with sex worker (range 0–3), 2.2; with non-regular partner (range 0–3), 1.0; with regular partner, 1.5 |

based FSWs, usually working on their own, had less protection than venue-based FSWs (Harcourt and Donovan, 2005), and had to avoid drinking in order to maintain self-control (Agha and Nchima, 2004). In the Philippines, compared to establishment-based FSWs, street FSWs were more likely to accept intoxicated clients (Chiao *et al.*, 2006), probably resulting from high competition and limited choices for clients (Wojcicki and Malala, 2001). Similar occupation-related drinking pattern was also reported among male clients. Migrant seafarers in Thailand were more likely to become intoxicated while having sex with non-regular partners than were male migrants of other occupations (Ford and Chamrathirong, 2008).

Transition into sex work. Studies from high-income countries reported that drinking problems and alcohol exposure in early life were associated with engaging in commercial sex (Silbert *et al.*, 1982; DeRiviere, 2005; Pedersen and Hegna, 2003). Among school girls in Norway, selling sex was associated with alcohol problems and alcohol exposure at parental home (Pedersen and Hegna, 2003). One-third of interviewed FSWs in Canada developed an addiction to alcohol or drugs prior to their involvement in the sex trade (DeRiviere, 2005). Juvenile and adult FSWs in San Francisco and ex-FSWs in Canada reported a history of excessive drinking among parents and siblings (Silbert *et al.*, 1982; Bagley and Young, 1987). However, another study in Canada reported no significant difference in parental excessive drinking between 45 adolescent FSWs and 37 non-FSWs (Na-

don *et al.*, 1998). One study in India reported that partners' drinking, unemployment and violence forced women to sell sex to support their families and children (Panchanadeswaran *et al.*, 2008).

Facilitating commercial sex. Several studies reported that both FSWs and their male clients used alcohol to facilitate participation in commercial sex: 19–76.5% of FSWs (median 50%) used alcohol prior to and during sex (de Graaf *et al.*, 1995; Gossop *et al.*, 1995; Rogers *et al.*, 2002; Kumar, 2003; Chiao *et al.*, 2006; Markosyan *et al.*, 2007; Wang *et al.*, 2007); 17–95% of FSWs (median 56%) reported having sex under the influence of alcohol/drugs in the past 6 months (de Graaf *et al.*, 1995; Weber *et al.*, 2002). In a study in Kenya, 82.4% of 222 FSWs who were binge drinkers had sex while being inebriated (Chersich *et al.*, 2007). A study in South Africa reported that a woman who accepts beer from a man is obligated to exchange sex; and it is acceptable for a man to request sex from a woman for whom he pays for the beers (Wojcicki, 2002). A study in England reported FSWs' willingness to engage in hazardous drinking for more money (Gossop *et al.*, 1995). In Chennai, India, clients brought alcohol for FSWs to drink to meet their sexual demands and fantasies (Sivaram *et al.*, 2004). A study in Armenia reported that 24% of FSWs were forced by clients to use alcohol prior to sex (Markosyan *et al.*, 2007). FSWs in Cambodia reported using alcohol and drug before sex, both voluntarily and coerced by clients (Nishigaya, 2002). In South India, FSWs reported using alcohol with either regular clients

Table 3. Summary of qualitative studies on alcohol use in the context of commercial sex, 1980–2008

| Author | Sample | Study methods | Main findings |
|----------------------------------|---|--|--|
| MacQueen et al., 1996 | 76 military conscripts visiting FSWs in Northern Thailand | 10 focus groups | Men used alcohol to reduce the inhibitions around their interpersonal interaction, reduce constraints to sexual risk taking, reinforce brothel attendance, enhance sexual pleasure and as an acceptable excuse for non-use of condoms |
| Nishigaya, 2002 | 20 FSWs in Cambodia | In-depth interviews | Take alcohol and drug before sex, both self-taken and forced |
| Wojcicki, 2002 | 53 FSWs, Hammanskraal and Soweto, Africa | Interview | A woman who accepts beer is obligated to exchange sex. It is acceptable for a man to request sex from a woman, for whom he pays for the beers |
| VanLandingham and Trujillo, 2002 | 10 young men in Bangkok, Thailand | In-depth interviews | A social norm for a group visit to a brothel after heavy drinking. One reported current non-use of condoms while engaging in commercial sex after drinking |
| Kumar, 2003 | FSWs and male clients in Chennai, South India | Ethnographic mapping and participant observation, in-depth interviews, informant interviews, focus group | FSWs' alcohol use facilitates their work; alcohol may disinhibit clients, exercise of power over FSWs; alcohol and other drug use, notably cannabis smoking, was invariably associated with these group sex acts. Intoxicated FSWs engaged in high-risk sexual activities and did not insist on condoms |
| Agha and Nchima, 2004 | 20 street- and nightclub-based FSWs in Lusaka, Zambia | In-depth interviews | Street-based FSWs did not drink alcohol while working in order to maintain self-control; when a nightclub-based FSW drank some beer, she would not choose men or negotiate condom use |
| Sivaram et al., 2004 | 21 male patrons in Chennai, India | In-depth interview | Men got courage with drinks in wine shop before buying sex, had FSWs inebriated to meet their sexual demands and became more aggressive to have forced sex |
| Brents and Hausbeck, 2005 | 25 FSWs, brothel's owners in Nevada, USA | Semi-structured and open-ended interview | FSWs often took inebriated clients because of the money |
| Choi and Holroyd, 2007 | 32 FSWs in a city, southwestern China | Semi-structured interview | FSWs (charging US\$ 10–13 for a single act and working in salons and bars) reported condom failure with inebriated clients because of alcohol's negative effect on their reasoning and the delay of ejaculation. Some could not afford to refuse to serve inebriated clients so had to risk non-condom use |
| Sivaram et al., 2007 | 19 male patrons in Chennai, India | In-depth interview | Male patrons was provided with courage by alcohol and felt disinhibited in having sex with FSWs, in a threshold level of 6 oz of alcohol |
| Ford and Chamratrithong, 2008 | 15 seafarers and 6 FSWs in Ranong and Trat, Thailand | 4 focus groups and 25 in-depth interviews | Peer pressure to drink alcohol and to have sex with FSWs was strong, inebriated men stole money of those refusing visiting FSWs, some seafarers drank to get the courage to buy sex; FSWs working on their own at drinking restaurants and having feeling with men after drinking do not want men to use condoms |
| Panchanadeswaran et al., 2008 | 49 FSW in Chennai, India, multi-pronged approach | Ethnographic data focus group discussions and in-depth interviews, 5 prominent themes | Sexual coercion and forced group sex in the context of clients' alcohol use; women's alcohol use asked by men posed barriers for condom use negotiation; intimate partners' use of alcohol, unemployment and wife beating forced women to take the lead in taking care the families and children by selling sex |

to facilitate enjoyment and involvement or irregular clients to numb themselves to take clients without emotional involvement (Kumar, 2003).

Alcohol use among male clients and other sexual partners. FSWs were exposed to alcohol-using or intoxicated clients or other sexual partners. A study in New York City re-

ported that 35.6% of FSWs lived with persons with drug or alcohol problems (Witte et al., 1999). Studies in northern Thailand reported that men's drinking was associated with ever visiting FSWs and frequently visiting at least monthly (Celentano et al., 1993); and among unmarried male clients, heavy drinkers were more likely to visit FSWs in the past 6

months (VanLandingham et al., 1993). Among reviewed studies, a high proportion (14–88%, median 66%) of male clients purchased sex services under the influence of alcohol in India, Netherlands, Northern Ireland and Thailand (VanLandingham et al., 1993; de Graaf et al., 1995; Fajans et al., 1995; Lim et al., 1995; Madhivanan et al., 2005). In one study conducted in India, 58% of clients used alcohol during at least five of the past 10 sexual encounters (Sivaram et al., 2007). Drunkenness before having sex with non-regular partners was common among migrant seafarers in Thailand (Ford and Chamrathirong, 2008). Three studies examined clients' drinking from FSWs' perspectives, where 60% of FSWs in Scotland reported having clients who were under the influence of alcohol (Plant et al., 1990); 37% in the Philippines reported having sex with intoxicated clients (Chiao et al., 2006); and 32% in Beijing reported clients' drinking during sex (Rogers et al., 2002). Qualitative studies reported that FSWs in Nevada often took intoxicated clients because of the money (Bretns and Hausbeck, 2005); some FSWs in a city in southwestern China cannot afford to refuse to serve inebriated clients (Choi and Holroyd, 2007).

Qualitative studies revealed the role of alcohol use in engaging and facilitating commercial sex among clients, through 'social norms', 'peer pressure', 'psychoactive effects' and 'power and influence'. A traditional social norm for a group of men to visit a brothel after heavy drinking (VanLandingham and Trujillo, 2002) and a strong peer pressure to drink and visit FSWs among migrant seafarers (Ford and Chamrathirong, 2008) were reported in Thailand. A study in Chennai, India reported that alcohol disinhibited clients and facilitated exercise of power over FSWs (Kumar, 2003). Drinking fortified the courage of clients to buy sex in Chennai, India and in Thailand (Sivaram et al., 2004, 2007; Ford and Chamrathirong, 2008). Military conscripts in Thailand reported that alcohol could reduce the inhibitions during interpersonal interaction and sexual risk-taking, reinforce brothel attendance and enhance sexual pleasure (MacQueen et al., 1996). Clients in the Netherlands reported that drinking increased their sexual desire and suppressed shame (de Graaf et al., 1995).

Self-medication and coping. Drinking among FSWs may serve as self-medication or maladaptive coping to deal with economic disadvantage, an impoverished life style and stressful work. The secrecy and stigmatization associated with illegal commercial sex have created stress, conflict and fear among FSWs (Hong et al., 2007b; Fang et al., 2008). Stressors include depression, internalized stigma, needs to hide their situation from family and friends, socioeconomic pressures and diminishing hope for the future. FSWs may also suffer from both internal conflicts (e.g. with the practice of selling sex) and external conflicts (e.g. with clients, police, or even managers) FSWs often suffer from elevated fears of the police, abusive clients, unwanted pregnancy and STIs (Rogers et al., 2002; Wechsberg et al., 2005). A quantitative study in England reported that routine drinking helped FSWs feel more relaxed, more confident and better able to work (Gossop et al., 1994). Street FSWs in the Philippines were more likely to drink alcohol before sex than non-bar-based FSWs (Chiao et al., 2006). Street FSWs, usually at the lowest end of the commercial sex spectrum (Huang et al., 2004; Hong and Li, 2008), might have more stress and suffer more stigma than establishment-based FSWs. Among drug-in-

involved FSWs in Florida, homeless FSWs were more likely to drink daily, compared with non-homeless FSWs (Surratt and Inciardi, 2004). A qualitative study in the Netherlands reported that FSWs used alcohol to put aside their negative feelings, reduce anxiety about making contact and overcome physical aversion for their clients (de Graaf et al., 1995).

Impacts of alcohol use

Adverse physical health. Worldwide, the impacts of alcohol use on physical health conditions of FSWs have been largely neglected including fatigue and sleep problems (Jung et al., 2008). Alcohol-related conditions (i.e. acute intoxication and chronic alcoholic cirrhosis) were the leading causes of death among FSWs, accounting for 9% of deaths in a three-decade open-cohort of 1969 FSWs in Colorado Springs (Potterat et al., 2004). In a slum in Kenya, alcohol use hampered FSWs' health-seeking behavior for their children (Chege et al., 2002).

Illicit drug use. Alcohol use may co-occur with illicit drug use among FSWs. Some exchanged sex primarily for drugs (Gossop et al., 1994; Inciardi and Surratt, 2001). All illicit drug users among migrant FSWs in the US Virgin Islands reported alcohol use (Surratt, 2007). In Kenya, daily drinkers of FSWs were more likely to report ever having practiced intravenous drug use (Yadav et al., 2005). In the Philippines, FSWs in alcohol-related risk situations were more likely to use drugs (Chiao et al., 2006).

Mental health problems. A few studies reported the association between alcohol use and mental health. Ex-FSWs in Korea had frequent and serious posttraumatic stress disorder symptoms, which were positively correlated with drinking problems (Jung et al., 2008). Alcohol intoxication was significantly associated with suicidal ideation among establishment-based FSWs in a rural county of China (Hong et al., 2007a). In Rutger's alcohol problem index (White and Labouvie, 1989) with a range of 0 to 4, 'alcohol-related problems' (e.g. depression, black-out reactions, dependence and social problems) were 2.22 for girls who sold sex and 0.74 for their counterparts who did not sell sex in a sample in Norway (Pedersen and Hegna, 2003).

Victimization of sexual violence. Several studies reported a consistent and positive association between alcohol use and sexual violence experienced by FSWs. A study in Kenya reported that binge drinking among FSWs was associated with being a victim of more sexual violence (i.e. being physically forced to have sex without payment; Chersich et al., 2007). One study in China reported that FSWs who experienced sexual coercion were more likely to drink alcohol before having sex with their clients (Wang et al., 2007). In a study among FSWs who were raped by gang members in Papua New Guinea, 67% were under the influence of alcohol during the rape, and 27% were under the influence of both alcohol and marijuana (Gare et al., 2005). Alcohol use by FSWs might impair their abilities to detect the risk of rape and escape from or fend off an assault, and increase their involvement in risk-prone situations (George and Stoner, 2000). Clients' alcohol use in the Netherlands aggravated their disagreement with and aggression towards FSWs (de Graaf et al., 1995). Sexual coercion and forced sex with FSWs occurred with clients' drinking in India (Sivaram et al., 2004; Panchanadeswaran et al., 2008).

Unprotected sex. Except for studies among FSWs from high-income countries including Scotland, Netherlands and England (Plant et al., 1990; de Graaf et al., 1995; Gossop et al., 1995), several studies from low- and middle-income countries reported consistent and positive associations between alcohol use and ‘unprotected sex’ (e.g. no use, inconsistent use or incorrect use of condom) in daily drinkers of FSWs in Nairobi, Kenya, binge drinkers in Mombasa, Kenya, those with ‘indulgence in alcohol’ in Malawi and those drinking before sex or having sex with intoxicated clients in the Philippines (Zachariah et al., 2003; Yadav et al., 2005; Chiao et al., 2006; Chersich et al., 2007); and in ‘male clients’ from Singapore, Papua New Guinea and India (Wee et al., 2004; Gare et al., 2005; Madhivanan et al., 2005). Furthermore, FSWs’ drinking was associated with ‘group sex’ in India (Kumar, 2003), ‘anal intercourse and sex during menses’ in Nairobi, Kenya (Yadav et al., 2005) and ‘condom breakage’ in Mombasa, Kenya (Chersich et al., 2007). Several ‘qualitative’ studies supported the positive associations between alcohol use and ‘unprotected sex’. In India, FSWs reported that their drinking asked by clients made them lose consciousness and prevented negotiation around condom use (Panchanadeswaran et al., 2008). In Thailand, migrant FSWs drinking with men did not ask them to use condoms (Ford and Chamrathirong, 2008). Intoxicated FSWs did not discuss or require condom use in India (Kumar, 2003) or Zambia (Agha and Nchima, 2004). In southwestern China, FSWs attributed their failure to use condoms with inebriated clients to alcohol’s negative effect on clients’ reasoning and delay of ejaculation (Choi and Holroyd, 2007). Young men in Thailand reported not using condoms while buying sex after drinking (VanLandingham and Trujillo, 2002). Drinking alcohol was cited as a reason for failure to use condoms among military conscripts visiting FSWs in Northern Thailand (MacQueen et al., 1996).

HIV/STIs. Studies have revealed inconsistent associations between drinking and HIV/STIs (see also Shuper et al., 2010). HIV prevalence was higher among FSWs who had ever drunk compared to lifetime abstainers in Kenya (Chersich et al., 2007). FSWs who drank before sex or had sex with intoxicated clients in the Philippines were more likely to report STIs (Chiao et al., 2006). Among migrant FSWs in the US Virgin Islands, drinkers were more likely to report STIs symptoms than non-drinkers (Surratt, 2007). Among FSWs in Mombasa, Kenya, alcohol users were more likely to report human herpesvirus-8 seroprevalence (Lavreys et al., 2003). However, drinking was not associated with STIs among FSWs in Nairobi, Kenya (Yadav et al., 2005) or infection of *Chlamydia trachomatis* and/or *Neisseria gonorrhoeae* among immigrant FSWs in Spain (Folch et al., 2008). Daily drinking was not associated with syphilis among FSWs in Spain (Estebanez et al., 1997). Drinking in the last visit to a brothel was not associated with STIs among clients from army conscripts in Thailand (Celentano et al., 1998).

DISCUSSION

Alcohol use in the context of commercial sex is prevalent and potentially harmful among both FSWs and their clients worldwide. Available studies documented common ‘problem drinking’ and ‘risk situations of alcohol use’ (e.g. alcohol pri-

or to or during sex, sex with intoxicated clients). Alcohol use was positively associated with adverse physical health, illicit drug use, mental health problems and victimization of sexual violence across available studies, although its associations with HIV/STIs and unprotected sex among FSWs in high-income countries were inconclusive.

Although increasing, studies remain limited in numbers and scope. The geographic concentration in Asia and North America may not appropriately reflect the actual geographic variation of alcohol use in commercial sex globally. We did not identify any studies from the Russian Federation, which has high rates of problem drinking (Bobak et al., 2004) and is a major destination in human trafficking of young women for sex work (United States of America Department of State, 2001). One-quarter of studies (18/70) investigated male clients; and over one-quarter of studies in Asia were from Thailand (7/26). Future studies are needed in more diverse locations, multiple sites and with appropriate balance on FSWs and clients.

While most situational factors are the common correlates of alcohol use/misuse among general populations (e.g. more alcohol exposure at parental home, alcohol-abusing parents, siblings or spouse), some were unique in commercial sex, including using alcohol as self-medication to cope with the numerous and constant stressors, use of alcohol as a disinhibitor or an ‘excuse’ for sex work and use of alcohol by male clients to enhance sexual performance. Cross-culturally, the economic imperative in the acceptance of commercial sex often results in FSWs’ willingness to engage in hazardous drinking or acceptance of inebriated clients (Gossop et al., 1995; Brents and Hausbeck, 2005; Choi and Holroyd, 2007). In some societies, social norms, peer pressure, and power and influence also play important roles.

This review identified occupational and environmental influences of drinking, including occupational use (e.g. part of the job or a source of income for FSWs in alcohol-serving venues), overt offers of alcohol, direct pressure or coercion (either physically or monetarily) from clients for FSWs to drink in order for male clients to exercise power and influence, and risk exposure among FSWs to have sexual encounter with alcohol-using or intoxicated clients. We concur with other authors (Chiao et al., 2006) that these pro-alcohol environment, norms and practices, which are embedded in the ‘routine’ activities in commercial sex, will put FSWs at risk of excessive drinking, sexual coercion and unprotected sex.

Limitations in the existing literature

Because of the illegal nature of commercial sex in most countries and regions and the difficulty in sampling, accessing and following up, only a few studies used a random sampling scheme or demonstrated the representativeness of their samples (Chakraborty et al., 1994; Rissel et al., 2003; Kayembe et al., 2008). Therefore, potential selection biases in sampling may limit the generalizability of the findings from most studies. Furthermore, the causal relationship in the consequences of alcohol use cannot be established based on the retrospective and observational data from mostly cross-sectional or case-control design.

Several measurement issues deserve attention. First, some studies only utilized general terms of ‘alcohol use’, ‘use of al-

cohol', or 'drink a lot' or 'too drunk' without any further details in frequency, quantity or recall period (e.g. Silbert *et al.*, 1982; Chege *et al.*, 2002; Mgone *et al.*, 2002; Lavreys *et al.*, 2003; Lung *et al.*, 2004; Bautista *et al.*, 2008). Second, it is difficult to make comparisons across studies because of the lack of appropriate standardization in measurement. Third, problem drinking was under-investigated (Pedersen and Hegna, 2003). For example, no study used the Alcohol Use Disorders Identification Test (Babor *et al.*, 2001) or other standardized and reliable screening tools. Fourth, most of the findings on the impacts of alcohol use must be interpreted with caution because they were based on overall measures and global associations rather than event-level measures and analysis. Fifth, few studies assessed the long-term impacts of alcohol use on women and their children. Sixth, there lacks investigation of neighborhood density of alcohol outlets (Kuntsche *et al.*, 2008).

Another limitation is the lack of evaluation of risk reduction efforts. Two HIV/STI intervention studies suggested the potential effect of behavioral intervention in reducing drinking among FSWs. The first study was an HIV testing and counseling intervention study among 407 street-based drug-involved FSWs in Miami, Florida. HIV-positive women were 1.9 times more likely to reduce the drinking level than HIV-negative women in a 3-month follow-up (Inciardi *et al.*, 2005). The second study was a randomized controlled trial among 80 FSWs in South Africa. Woman-focused intervention resulted in a larger reduction in daily alcohol use in 1 month follow-up than that of a standard intervention (Wechsberg *et al.*, 2006). However, alcohol use was not a primary outcome, and the follow-up period was relatively short in both studies.

Limitations of the current review

Non-English-language journals or unpublished studies were not included. We did not abstract related effect sizes because limited studies were available for specific health outcomes. Although male sex workers are excluded, alcohol use deserves attention in this understudied population (de Graaf *et al.*, 1995) and their intersection with FSWs. Bias in reporting trend of reviewed studies might result from counting different articles from potentially the same datasets (e.g. Witte *et al.*, 1999, 2000).

Research, intervention and policy implications of the findings

Future research should assess the context of alcohol use with culturally appropriate measures, neighborhood density of alcohol outlets, health care seeking for alcohol abuse and event-level measures in more diverse settings and with more standardized measures.

The co-occurrence of alcohol use with multiple health problems among FSWs and their clients make them appropriate targets for integrated service (e.g. HIV/STIs, mental health, sexual violence and women's health). Screening and intervening for alcohol misuse should be conducted in multiple settings such as clinics, emergency room, social service agency and community programs. Incrementally integrating existing service delivery systems with alcohol-related components may increase the effectiveness and efficiency of both types of service (Blankenship *et al.*, 2006), and meet needs in resource-limited settings (Mårdh *et al.*, 1999; Briggs and Garner, 2006).

Alcohol risk reduction effort should include multiple components: (i) an empowerment component in response to FSWs' socially marginalized status; (ii) a behavioral management and problem-solving component in response to FSWs' numerous stressors in their lives; (iii) gender, power and group norm component in response to cultural beliefs regarding gender role and expectation of alcohol use and sexual risk among women; and (iv) relevant behavioral skills to avoid unprotected sex with alcohol-using or intoxicated clients, manage their drinking when they are forced to drink, deal with abusive or uncooperative clients, and utilize and mobilize workplace or community resources.

In addition, the multiple contexts of alcohol use call for multilevel (individual, occupational, environmental) intervention approaches. Integrating multilevel contexts and implementing structural interventions could reinforce and sustain individual-level changes (Blankenship *et al.*, 2000; Poundstone *et al.*, 2004). The interest in structural factors of alcohol use inherent in sex work environment companies with the current research trend in studying environmental-structural factors in HIV prevention among FSWs, including venues, community and government policy (Kerrigan *et al.*, 2006; Shannon *et al.*, 2009).

Future alcohol risk reduction intervention in commercial sex might employ a venue-based approach. Due to the absence of related legislation and governmental policy in many countries, venue-based interventions have been viewed as a significant community-level intervention strategy (Sivaram *et al.*, 2004, 2007; Hong and Li, 2008; Choi *et al.*, 2008). Furthermore, alcohol use is a contextualized behavior. Social norms and institutional policy within commercial sex venues as well as agents overseeing the FSWs (i.e. the 'gatekeepers' and managers of the establishments) are important in influencing alcohol use and sexual behavior among venue-based FSWs (Yang *et al.*, 2005b; Chiao *et al.*, 2006; Kerrigan *et al.*, 2006; Morisky *et al.*, 2006; Hong *et al.*, 2008). Venue-based interventions could be promising because they occur where interactions among individual, environmental and cultural factors take place and where male clients can be targeted. While FSWs may be highly mobile, venues and gatekeepers are relatively stable. Thus, a working environment supportive of risk reduction behavior serves to both reinforce and maintain behavior change, and serves as an important on-going resource for risk reduction for new or 'rotating' FSWs (re)joining the establishments in the future.

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