

# Alcohol Consumption among Female University Students in Israel: a Cross Sectional Study of Background Characteristics and Drinking Patterns

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**Abstract** This cross sectional study examined alcohol use, binge drinking and other problem behavior among Israeli university female students. Scant information is known about Israeli university student alcohol use and related problem behavior. Academic study discipline status (e.g., social work, nursing and other non-helping disciplines) was hypothesized to be a predictor of university student alcohol use and problem behavior rates. Study hypotheses were supported, in part. Academic discipline (social work and nursing) differentiated rates of alcohol use, binge drinking and other problem behavior. However, when grouped into helping and non-helping academic disciplines, few differences were evidenced. Students drink more beer, wine and hard alcohol than those 20 years ago at the same university; however, fewer students drive after drinking. Present results, albeit restricted, reflect increased drinking but less driving after drinking after an intensive campaign to curb such problem behavior. Further research is needed of alcohol use and problem behavior for policy, prevention and treatment purposes. Such research should include regular monitoring throughout the country regardless of gender status and academic discipline.

**Keywords** Alcohol use · Binge drinking · University female students

Alcohol use by adults of legal drinking age in moderation (e.g., one drink per day for women and up to two drinks per day for men) may be considered part of most healthy eating patterns

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(U.S. Department of Health and Human Services and U.S. Department of Agriculture 2015). However, when alcohol is abused it is a problem that affects people regardless of their ethnic, education or socioeconomic status. There is no single factor explaining why a person uses or abuses alcohol. Reasons commonly referenced include: 1) physical and genetic characteristics affecting body processes and functions; 2) cognition and emotion including values, attitudes, motivation and comprehension; 3) behavior consisting of self-control, personal management, communication abilities, and task achievement; 4) social network referring to relations with peers, parents, teachers, fellow workers and others; and, 5) social and cultural conditions that define and govern behavior patterns (Brooks-Russell et al. 2014; Myers and Isralowitz 2011).

Harmful drinking that causes damage to health (WHO 2016a), often with adverse events (Reid et al. 1999), is a significant public health concern among college age students in many countries. For example, it has been reported that about 60% of US college age students engage in last 30 day, alcohol use; and, the consequences of such behavior are death resulting from unintentional injuries including motor-vehicle crashes; physical violence mostly by another student who has been drinking; sexual assault or date rape; and, academic problems such as missing class or doing poorly on exams or papers (NIAAA 2015). Furthermore, research shows college students alter their health and wellbeing (e.g., skipping meals and vomiting) to consume more alcohol (Research Society on Alcoholism 2016).

A potentially serious form of alcohol use is binge drinking that has been labeled a “huge health problem” by the US Centers for Disease Prevention and Control (DeNeon 2010). The definition of binge drinking differs between and even within countries (NIAAA 2016; SAMHSA 2016; WHO 2016b). However, the core meaning of the term is focused on prolonged use and the giving up of usual activities (Schuckit 1998). This behavior is responsible for more than half of all deaths attributed to excessive drinking each year (CDC 2016) as well as increased accidents, injury and violence (Anderson 2008; Naimi et al. 2003). On US college campuses, the rate of binge drinking is about 35% and the difference between females and males is diminishing (Johnston et al. 2015:28).

## Israel

The rate of alcohol consumption is rising in the country (Knesset 2009; OECD 2015). This is evidenced by the number of pubs, supermarkets, neighborhood kiosks and specialty shops selling alcohol as well as alcohol related driving behavior including road accidents, injuries and death (Neumark 2012; WHO 2016c). Also, consumption and prevalence rates of alcohol use disorders and dependence are higher than the average reported for the European Region (WHO 2014). This rise may be attributed, in part, to the influx of 1 million people since 1989 from the former Soviet Union where alcohol use and abuse are common place (Isralowitz and Reznik 2013). Representation in treatment services and homelessness, that often includes heavy use of alcohol (APHA 2016), has been reported more prevalent among Russian speaking adult immigrants than those of Israeli origin (Rahav et al. 1999; Weiss 2008).

Research of alcohol use attitudes and behavior in the country includes immigrants from the former Soviet Union (FSU) and other countries (Baron-Epel et al. 2015; Hasin et al. 1998; Isralowitz and Reznik 2014; Isralowitz et al. 2009; Neumark 2012; Weiss 2012), Jewish and Arab men (Neumark et al. 2001); high school youth (Isralowitz and Reznik 2015a, b); school drop outs (Isralowitz and Reznik 2011), hospitality workers (Isralowitz et al. 2012) and others. A detailed study of university student alcohol use and problem behavior was conducted twenty

years ago (Isralowitz and Peleg 1996); however, there remains a dearth of regularly reported information among young adults in the country.

The purpose of the present research was to examine last 30 day alcohol use among Israeli female students including their binge drinking, driving after drinking and other related behavior. The study results contribute to the formation of alcohol related policy and prevention programs on university campuses throughout the country that have been either weak or non-existent.

## Method

Academic study status (e.g., social work, nursing and other non-helping disciplines) was hypothesized to be a predictor of university student alcohol use and related problem behavior rates. A cross sectional sample of female undergraduate students ( $n = 473$ ) from a major university in Israel participated in this 2015 study. Respondents included students from social work ( $n = 154$ ; 33%), nursing ( $n = 166$ ; 35%) and other faculties such as engineering and natural sciences ( $n = 153$ ; 33%). Male respondents ( $n = 28$ ) were excluded because of the low number of respondents ( $n = 28$ ) and limited contribution to the study analysis.

The 31 item Substance Use Survey Instrument (SUSI) was used for data collection. SUSI includes demographic items (e.g., age, gender, mother's country of origin, study and employment status) and questions similar to those used for US national surveys (Center for Behavioral Health Statistics and Quality 2015; Johnston et al. 2015). The instrument prepared in English, translated to Hebrew and back translated, has been found to be valid and reliable (i.e., Cronbach alpha =0.79) (Isralowitz and Reznik 2013, 2015a; Reiber 2002),

The study cohort was recruited with approval from the ethics committees of the university departments involved and course instructors. Students were asked to complete the questionnaire at the beginning of their class; informed all information provided was confidential with no possibility of identifying respondents; and, there was no obligation to complete the questionnaire. Statistical analyses including chi-square test and t-test were performed using the Statistical Package for the Social Sciences (SPSS) version 22.

## Findings

Respondents ranged in age from 19 to 52 with a median of 24 years; and, mothers' countries of origin were 64.3% ( $n = 304$ ) Israel, 14.2% ( $n = 67$ ) FSU and 21.5% ( $n = 102$ ) other countries (e.g., United States, Argentina, and Ethiopia). The majority of students were single (63.2%) with full time study status (95.6%) who worked part-time (72.5%). Students with FSU background characteristics were less inclined to smoke (38.1% vs 51.8%;  $p < .05$ ) and drink hard liquor (41.4% vs 55.4%;  $p < .05$ ) than those with parents born in Israel. Last 30 day alcohol use reported 20 years ago (Isralowitz and Peleg 1996) compared to present levels at the same university reflect a considerable rise of beer (51% vs. 79%;  $p < .001$ ); wine (54% vs. 72%;  $p < .001$ ) and, hard liquor (34% vs. 51%;  $p < .001$ ) use. However, students now drive after drinking at a lower rate - 7.5% compared to 21% found years ago

**Table 1** Female social work & nursing students. last month alcohol use and problem behavior

	Social work ( <i>N</i> = 154)	Nursing ( <i>N</i> = 166)	Total ( <i>N</i> = 320)
Age, Mean (Median; SD)	24.5 (24.0; 1.9)*	25.2 (24.0; 4.0)*	24.9 (24.0; 3.2)
Range	21–34	20–52	20–52
Country of origin, % (n)	***	***	
Israel	70.1 (108)	51.8 (86)	60.6 (194)
FSU	7.1 (11)	24.1 (40)	15.9 (51)
Other	22.7 (35)	24.1 (40)	23.4 (75)
Married/Partner	31.8 (49)	42.2 (70)	37.2 (119)
Typical evening/night activity, % (n)	***	***	
Work or studying	29.2 (42)	69.6 (103)	49.7 (145)
Other	70.8 (102)	30.4 (45)	50.3 (147)
Work (part or full time)	75.3 (116)	67.5 (112)	71.3 (228)
Full time students	98.1 (151)	94.6 (157)	96.3 (308)
Smoking, % (n)	54.5 (78)*	42.6 (63)*	48.5 (141)
Beer, % (n)	78.5 (113)	76.4 (113)	77.4 (226)
Wine, % (n)	73.4 (105)*	61.9 (91)*	67.5 (196)
Hard liquor, % (n)	55.6 (80)*	41.2 (61)*	48.3 (141)
Binge drinking, % (n)	34.7 (50)**	20.7 (31)**	27.6 (81)
Passenger in car when the driver has been drinking, % (n)	16.0 (23)	10.1 (15)	13.0 (38)
Driving car/motorbike after drinking, % (n)	7.6 (11)	6.0 (9)	6.8 (20)
Mix energy drink & alcohol, % (n)	20.8 (30)	12.7 (19)	16.7 (49)
During the past 12 months, did you smoked more, % (n)	28.5 (41)	22.7 (34)	25.5 (75)
During the past 12 months, did you drink alcohol more, % (n)	11.8 (17)	10.0 (15)	10.9 (32)
Last month miss any classes because party habits, % (n)	38.3 (54)**	23.3 (34)**	30.7 (88)

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

### Social Work and Nursing Students: the Helping Professions

Social work, more than nursing, students reported last 30 day wine (73.4% vs. 61.9%;  $p < .05$ ) and hard liquor use (55.6% vs. 41.2%;  $p < .05$ ). Also, social work students reported more last 30 day binge drinking (34.7% vs. 20.7%;  $p < .01$ ) and missing a class because of party habits involving alcohol use (38.3% vs. 23.3%;  $p < .05$ ). Students from social work and nursing did not differ in terms of last 30 day beer drinking (77.4%), being a passenger in a car when the driver has been drinking (13.0%), driving a car/motorbike after drinking (6.8%) and using an energy drink (e.g., Red Bull) with alcohol (16.7%) (Table 1).

### Helping (Social Work & Nursing) and Non-Helping Student Comparison

Last 30 day wine use was higher among students in disciplines other than the helping professions of social work and nursing (80.7% vs. 67.5%;  $p < .01$ ). However, regardless of study discipline, rates were similar for last 30 day beer (78.5%) and hard liquor (51.0%) use; binge drinking (28.7%); being a passenger in a car when the driver had been drinking (12.1%); driving a car/motorbike after drinking (7.5%); having alcohol with an energy drink (17.5%); and, missing a class during the last 30 days because of party habits (33.6%) (Table 2).

**Table 2** Last month alcohol use & problem behavior among female social work/nursing (helping) & other (non helping) students

	Social work & nursing (N = 320)	Other (N = 153)	Total (N = 473)
Age, Mean (Median; SD)	24.9 (24.0; 3.2)	24.6 (25.0; 2.0)	24.5 (24.0; 2.9)
Range	20–52	19–31	19–52
Country of origin, % (n)			
Israel	60.6 (194)	71.9 (110)	64.3 (304)
FSU	15.9 (51)	10.5 (16)	14.2 (67)
Other	23.4 (75)	17.6 (27)	21.6 (102)
Married/Partner	37.2 (119)	35.9 (55)	36.8 (174)
Typical evening/night activity, % (n)			
Work or studying	49.7 (145)	43.4 (63)	47.6 (208)
Other	50.3 (147)	56.6 (82)	52.4 (229)
Work (part or full time)	71.3 (228)	75.2 (115)	72.5 (343)
Full time students	96.3 (308)	94.1 (144)	95.6 (452)
Smoking, % (n)	48.5 (141)	47.9 (69)	48.3 (210)
Beer, % (n)	77.4 (226)	80.7 (117)	78.5 (343)
Wine, % (n)	67.5 (196)**	80.7 (117)**	72.0 (313)
Hard liquor, % (n)	48.3 (141)	56.6 (82)	51.0 (223)
Binge drinking, % (n)	27.6 (81)	31.0 (45)	28.7 (126)
Passenger in car when the driver has been drinking, % (n)	13.0 (38)	10.3 (15)	12.1 (53)
Driving car/motorcycle after drinking, % (n)	6.8 (20)	9.0 (13)	7.5 (33)
Mix energy drink & alcohol, % (n)	16.7 (49)	19.3 (28)	17.5 (77)
During the past 12 months, did you smoked more, % (n)	25.5 (75)	26.9 (39)	26.0 (114)
During the past 12 months, did you drink alcohol more, % (n)	10.9 (32)	17.2 (25)	13.0 (57)
Last month miss any classes because party habits, % (n)	30.7 (88)	39.6 (57)	33.6 (145)

\*\* $p < .01$ 

## Discussion

The study hypotheses were supported, in part. Academic discipline was found to differentiate social work and nursing student rates of alcohol use, binge drinking, party habits and other factors. When helping (i.e., social work and nursing) and non-helping groups were compared few differences were found. Such results point to the need for additional research utilizing multivariate analysis to understand the complex relationship between alcohol use and other factors (Willard and Schoenborn 1995).

Factors noted above evidence a rise in alcohol use among university students but a decline in driving after drinking. This is a positive outcome of an intensive campaign to curb such problem behavior. However, further examination of this issue is needed including regularly scheduled monitoring across academic institutions and information about pedestrian death or injury that may be alcohol related. Consistent with other research, FSU students reported lower rates smoking and hard alcohol use than those of Israeli origin (Israelowitz and Reznik 2011; Israelowitz et al. 2012).

## Methodological Limitations

A question that often arises regarding research of university age students is whether prevalence and trend estimates pertain to all young people including those who did not participate in the study. This issue has been examined extensively (Caspar 1992; Johnston et al. 2015). We believe there may be some underestimation of the prevalence of alcohol use in the study cohort as a result of the absentees being omitted from the study universe. However, the failure to include absentees is not believed to substantially affect the present estimates of alcohol use and related problem behavior (Israelowitz and Reznik 2015a).

## Conclusions and Implications

Among institutions of higher education, the challenge is to: 1) gather information about student drinking practices; 2) disseminate information about its use and abuse; and, 3) conduct education programs and courses that promote alcohol awareness and understanding (Kleinot and Rogers 1982). These activities should be interdisciplinary and practice oriented linked to clinical support training and supervision. Also, such university-based programs should consist of advisory committees including university administrators, academic personnel and students as well as have provision for counseling and referral services, research, and program evaluation (Gonzalez 1986). The ability to support and implement these efforts depends on an awareness focused on the health and well-being of all young adults including university students.

Finally, a national response needs to promote the health and well-being of all young adults. The key to addressing alcohol use is “not prohibition, but prudence. The enemy is not drinking, but problem drinking.... that causes problems ....” (Califano 1979:369). In most developed countries, and Israel is no exception, the negative consequences associated with alcohol use and abuse, after smoking, is the most preventable health problem for the country to address.

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### Compliance with Ethical Standards

**Conflict of Interest** Richard Israelowitz, Orly Sarid, Adi Dagan, Orli Grinstein-Cohen and Alexander Reznik declare that they have no conflict of interest.

**Informed Consent** All study procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (Ben Gurion University, Israel) and with the Helsinki Declaration of 1975, as revised in 2000 (5). No patients were involved; data were collected in an anonymous, voluntary manner. No identifying information from respondents were collected.

**Human and Animal Rights statement** No animal or human studies were carried out by the authors for this article.

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