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**Binge Drinking among Residential Program Youth in Israel:  
Toward an Understanding of Predictors for Policy and Prevention**

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## Abstract

Alcohol use is attributed to about 25% of the total deaths among youth and young adults. Harmful alcohol use among youth has been overshadowed by the preoccupation with widespread use of other substances including cannabis and prescription drugs. A cross-sectional cohort of 1,327 residential program and high school youth were compared regarding binge drinking habits and risk factors. Data was collected from 2004 to 2016. Residential program youth binge drinking predictors were substance abuse within the last month, alcohol availability, causing harm to others (e.g., fighting, stealing and possessing a weapon), unstructured day activity, and being a passenger in a car where the driver had been drinking. Binge drinking predictors among high school were smoking within the last month and alcohol availability. Effective risk behavior prevention involves a wide range of factors including the need to control alcohol access among those under the legal drinking age. An eco-systems approach involving youth and people they are in contact with is a viable prevention approach. However, conflicting personal and economic factors regarding alcohol use, among others, are a daunting barrier to overcome.

*Keywords:* Binge drinking, cannabis, prescription drugs, residential program, high school

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The harmful use of alcohol is a worldwide problem that has a major impact on public health. Its magnitude has been overshadowed in recent years by the preoccupation with widespread use of other substances including cannabis and prescription drugs, especially opiates (Isralowitz & Reznik, 2016). Worldwide, 3.3 million deaths every year are the result of harmful use of alcohol accounting for nearly 6% of all mortalities. Overall, about 5% of the global burden of disease and injury is the result of alcohol use and alcohol is attributed to about 25% of the total deaths among youth and young adults. Causal relationships have been found between alcohol and mental disorders, injuries, and infectious diseases such as tuberculosis and HIV/AIDS, as well as social and economic losses to individuals, families, and society at large (WHO, 2018).

Nearly all substance use can be traced back to adolescent years. Many young people, particularly throughout the United States and Europe, use alcohol more than cigarettes and cannabis and start drinking at an early age (i.e., before 13 years). Gender status differences, including use in the last 30 days, are shown to be diminishing (EMCDDA, 2005; Miech et al., 2015).

A serious form of alcohol use is binge drinking, which has been labeled a "huge health problem" by the US Centers for Disease Prevention and Control (DeNeon, 2010). Binge drinking is commonly defined as five or more alcoholic drinks on the same occasion on at least 1 day in the past 30 days. A variant of this behavior is "heavy drinking" which is binge drinking on 5 or more days in the past 30 days (SAMHSA, 2016).

A large portion of alcohol consumption among young people is in the form of binge drinking (NIAAA 2015) and among youth ages 16-17 in the United States and Western countries, the rate has been reported to be as high as 33% (EMCDDA/ESPAD, 2016; Johnston et al., 2018; SAMHSA, 2017). Additional information about current drinkers ages 12-20 shows 63% binge drink and of this group 24% are heavy drinkers (Hermens and Lagopoulos, 2018; SAMHSA, 2017).

### **Israel**

Israel is not immune to adolescent alcohol misuse and problem behavior (Isralowitz and Reznik 2015a; Neumark 2012), and is on the rise evidenced by the number of road accidents, injuries, and deaths (Isralowitz et al., 2017; Neumark, 2012; WHO, 2016). Consumption and prevalence rates of alcohol use disorders and dependence are higher than the average reported for the European Region (WHO, 2014). Other research shows high levels of binge drinking, travelling in a car with a driver who had been drinking, driving a car after drinking, alcohol use in the last month, and having been drunk at least once in the past year (Bar-Hamburger et al., 2009; Isralowitz & Rawson, 2006; Knesset, 2009). Former Soviet Union (FSU) and Ethiopian origin youth tend to binge drink more than those of Israeli-origin and parental, peer, and school experiences tend to be predictors of alcohol drinking among first and second-generation immigrant youth (Isralowitz & Reznik, 2014; Walsh et al., 2014).

Recent information exists about immigrants from the former Soviet Union (FSU) and other countries (Baron-Epel et al., 2015; Isralowitz & Reznik, 2014; Neumark, 2012; Weiss, 2012), high school youth (Isralowitz & Reznik 2015a; Isralowitz & Reznik 2015b), school drop outs (Isralowitz & Reznik 2014), hospitality workers (Isralowitz et

al., 2012), university students (Reznik et al., 2018), and others. However, there is a dearth of usable information regarding high risk youth, especially those referred to a residential program for behavior and/or learning disorders. The purpose of this article is to report on such Israeli youth's binge drinking behavior as well as risk and protection factors that may contribute to policy and prevention purposes.

## **Methods**

### **RADAR Center**

Established in 1996, the Ben Gurion University (BGU) Regional Alcohol and Drug Abuse Research (RADAR) Center conducts training, education, and research regarding harmful drug use and related behaviors. It has received recognition and awards from the US National Institute on Drug Abuse (NIDA) for its contributions to scientific diplomacy through outstanding efforts in international collaborative research initiatives, US Substance Abuse Mental Health Services Administration (SAMHSA), US Agency for International Development (USAID), United Nations Office on Drugs and Crime (UNODC), government and non-government agencies, and universities world-wide. From its conception, the RADAR Center has been an "outpost" for drug abuse awareness. It has continued in this capacity longer than any similar non-government, academic institute in Israel and the Middle East region. During this period, the RADAR Center has developed the Substance Use Survey Instrument (SUSI) to collect uniform data across locations and among populations of concern, particularly youth at risk.

## **Sample**

Youth villages in Israel are residential facilities with programs for youth with behavioral and/or learning problems, a structured environment that contributes to social integration (Grupper, 2013; Kashti, 1988; Zeira et al., 2014). Among the youth often referred to a residential program are those from families with various problems and low socio-economic conditions. Additionally, residential programs exist for youth with drug addiction. The Ministry of Social Services and Social Affairs provides 90 day residential facilities for treatment (Shabi, 2018).

Data was collected from 2004 to 2016. The study cohort included 1,327 youth – those in residential programs (n=1074) and Jewish, non-religious high schools (n=253). The cohort was 66.3% male (n =880) and 33.7% female (n = 447). Country of origin was determined by mothers' birthplaces. The study cohort included youth of Israeli origin (39.4%) and other countries, particularly the former Soviet Union (FSU) and Ethiopia (60.6%).

## **Procedure**

Participating youth completed a simply worded questionnaire in Hebrew. If assistance was needed to understand the questions asked, a RADAR Center staff member was available to help. Data was collected with appropriate consent complying with human subject guidelines. Also, approval for research data collection was received from Ben Gurion University of the Negev human subjects committees and the Israel Ministry of Education.

## **Instruments and Measures**

The data collection instrument used was the Substance Use Survey Instrument (SUSI).

To monitor drug use over time and across locations among youth and young adults, a culturally sensitive instrument was developed by the BGU RADAR Center. The SUSI was developed in consultation with international experts, youth service personnel, and youth and young adults, and with support received from the US Agency for International Development – Middle East Regional Cooperation Program. SUSI consists of 22 simple questions about personal background characteristics and substance use attitudes and behaviours (Isralowitz, 2017).

Many of the SUSI questions are similar to those used for the NIDA Monitoring the Future: Adolescent Drug Use Survey and the SAMHSA National Survey on Drug Use and Health. During the past 20 years, SUSI has been updated to address population demographics, new substances being used, and to simplify questions based on the reading comprehension level of the target populations studied (Isralowitz et al., 2016). The instrument has been found to be reliable (Cronbach Alpha = 0.93).

## **Analysis**

Descriptive statistics, chi-square tests, t-tests, and binary logistics regression were performed using SPSS, version 25. To simplify analysis of the data, certain SUSI risk taking behavior questions were clustered. The clusters included: 1) harm to others (i.e., fighting, stealing, and possessing a weapon), 2) harm to self (i.e., a decline in school achievement and relations with family/friends), and 3) harm by others (i.e., stolen or damaged personal property, threats and injury).

## Results

The ages of the participants ranged from 12-18 with a median of 16. Residential program youth, compared to those in high school, reported higher levels of being: secular (54.7%; 31.3%  $p<.001$ ), Israeli origin (42.5%; 26.1%;  $p<.001$ ) and from families who receive welfare benefits (46.1%; 23.5%;  $p<.001$ ). Also, they reported more likely to participate in unstructured activity during the day and night (52.2%; 22.7%;  $p<.001$  and 65.3%; 48.4%;  $p<.001$ ), use alcohol during the last month (75.2%; 53.3%;  $p<.001$ ), binge drink (41.8%; 30.4%;  $p<.001$ ), use other substances (e.g., cannabis) during the last month (59.6%; 16.5%;  $p<.001$ ), be a passenger in a car when the driver has been drinking (21.5%; 8.1%;  $p<.001$ ), harm others (60.3%; 32.8%;  $p<.001$ ), harm self (70.5%; 39.9%;  $p<.001$ ), and be harmed by others (56.1%; 39.1%;  $p<.001$ ). Table 1 provides a comparison of the study of youth based on background characteristics and risk behaviors.

Table 1

### Alcohol Use, Binging Drinking and Risk Taking Behavior among High School & Residential Program Youth

	School Youth (n=253)	Residential Program Youth (n=1074)
Age, Mean (SD)	15.6 (1.3)***	16.4 (1.3)***
Median	15.0	17.0
Gender		
Male, n (%)	160 (63.2)	720 (67.0)
Female, n (%)	93 (36.8)	354 (33.0)
Country of origin	***	***
Israel, n (%)	66 (26.1)	455 (42.5)
Other, n (%)	187 (73.9)	616 (57.5)
Religious status	***	***
Secular, n (%)	111 (45.3)	725 (68.7)
Religious, n (%)	134 (54.7)	330 (31.3)

Welfare benefits recipient, n (%)	52 (23.5)***	461 (46.1)***
Last month cigarettes smoking, n (%)	90 (36.4)***	647 (60.6)***
Last month alcohol use, n (%)	128 (53.3)***	795 (75.2)***
Last month binge drinking, n (%)	75 (30.4)***	444 (41.8)***
Drinking and driving - as driver or passenger	28 (11.4)***	256 (24.5)***
Last month any other substance use, n (%)	39 (16.5)***	619 (59.6)***
Cigarette availability, n (%)	148 (59.7)***	865 (85.5)***
Alcohol availability, n (%)	144 (58.1)***	860 (85.0)***
Unstructured day activity (hanging around), n (%)	56 (22.7)***	551 (52.2)***
Unstructured night activity (hanging around), n (%)	119 (48.4)***	688 (65.3)***
Harm to other behavior (e.g. fighting), n (%)	83 (32.8)***	648 (60.3)***
Harm to oneself behavior (e.g. decline family relations), n (%)	101 (39.9)***	757 (70.5)***
Harm by other behavior (e.g. threats), n (%)	99 (39.1)***	603 (56.1)***

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

Table 2 compares study of youth background and risk factors for binge drinking.

Table2

Binge Drinking among High School & Residential Program Youth

	High School Youth Binge Drinking		Residential Program Youth Binge Drinking	
	Yes (n=75)	No (n=172)	Yes (n=444)	No (n=619)
Gender, n (%)				
Male	54 (72.0)	101 (58.7)	288 (64.9)	424 (68.5)
Female	21 (28.0)	71 (41.3)	156 (35.1)	195 (31.5)

Origin, n (%)	**	**	*	*
Israel	10 (13.3)	55 (32.0)	170 (38.4)	282 (45.6)
Other countries	65 (86.7)	117 (68.0)	273 (61.6)	337 (54.4)
Secular, n (%)	35 (47.3)	73 (44.2)	312 (71.9)	407 (66.7)
Welfare benefits recipient, n (%)	21 (33.3)*	31 (20.1)*	215 (51.1)**	241 (42.1)**
Last month cigarettes smoking, n (%)	55 (74.3)***	33 (19.5)***	265 (60.0)	376 (60.8)
Cigarette availability, n (%)	51 (71.6)**	92 (54.1)**	403 (94.6)***	458 (79.1)***
Alcohol availability, n (%)	65 (89.0)***	78 (45.3)***	406 (95.3)***	449 (77.5)***
Car passenger when driver drinking, n (%)	13 (17.3)***	7 (4.1)***	156 (35.1)***	73 (11.8)***
Driving after drinking, n (%)	13 (17.6)***	1 (0.6)***	72 (16.3)***	21 (3.4)***
Unstructured day activity (hanging around), n (%)	18 (24.3)	36 (21.4)	253 (57.5)**	294 (48.3)**
Unstructured night activity (hanging around), n (%)	43 (59.7)*	72 (42.9)*	319 (72.5)***	364 (60.2)***
Harm to other behavior (e.g. fighting), n (%)	38 (50.7)***	43 (25.0)***	321 (72.3)***	322 (52.0)***
Harm to oneself behavior (e.g. decline family relations), n (%)	46 (61.3)***	53 (31.4)***	341 (76.8)***	411 (66.4)***
Harm by other behavior (e.g. threats), n (%)	35 (46.7)	63 (36.6)	271 (61.0)***	327 (52.8)***

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

Based on logistic regression analysis, predictors of school youth binge drinking were: smoking in the last month (OR = 8.08; 95% CI 3.54–18.40) and alcohol availability (OR = 4.30; 95% CI 1.56–11.91). The Nagelkerke R<sup>2</sup> was equal to 0.420, and the correct prediction rate was 81.3%. Residential program youth binge drinking predictors were: any substance use in the last month (OR = 2.70; 95% CI 1.96–3.73), alcohol availability (OR = 4.94; 95% CI 2.74–8.88), harm to others (OR = 1.54; 95% CI 1.11–2.13),

unstructured day activity (OR=1.43; 95%CI 1.05 – 1.95), and being a passenger in a car where the driver had been drinking (OR = 2.72; 95% CI 1.87–3.94). The Nagelkerke R<sup>2</sup> was equal to 0.241, and the correct prediction rate was 68.3%.

The only common predictor for residential and high school youth was alcohol availability.

### **Limitations**

This study is subject to limitations. First, a limited number of high school and residential treatment youth were studied over an extended time period and in locations that may not be representative of youth elsewhere. Second, data was based on self-reports of adolescents who may have under or over reported their risk-taking behavior. Adolescents, especially those in a residential treatment facilities, can be suspicious about information gathering and as such may provide arbitrary or inconsistent responses (Hawke et al., 2005). Study results show residential program youth have significantly higher levels of alcohol use including binge drinking and problem behavior than youth attending high school. This study outcome is expected, however, it does not indicate how underage drinking youth access alcohol. Such information and other related details require a qualitative study approach that will involve interviewing youth and asking them more detailed questions that can then be examined for selected themes.

### **Discussion**

The most common information on binge drinking among youth tends to be specific to those in high school. Such information is valuable for the identification of trends and attitudes. However, it does little to help understand the extent of this problem among young people placed in residential programs – a population that needs to be well

understood and addressed in terms of education, health, and social services for problem behavior and possible concurrent disorders.

Some experts believe problem alcohol use prevention may be enhanced if factors such as country of origin, religiosity, and gender status are addressed (American Psychiatric Association, 2006; Bartholomew et al., 2005; Isralowitz et al., 2017; Walton-Moss & McCaul, 2006). However, based on the present study results, such factors tend to have little significance as binge drinking predictors.

The study findings have prevention and treatment implications for residential program youth. Undoubtedly, effective risk behavior prevention is no simple task considering the wide range of factors that need to be considered and addressed including the availability of alcohol to youth under the age of 18. In Israel, it is common that bars and stores do not verify age when an alcoholic drink is ordered, or a product is purchased. This raises questions about the ability of government agencies to regulate and control alcohol use as well as other substances, especially cannabis, as it is being considered for legalization.

Finally, based on the information presented in this paper, an eco-systems approach seems worthy of policy and program development consideration as a means of preventing harmful alcohol use and binge drinking. The benefits of such intervention, especially designed as a brief intervention, may affect not only youth using alcohol but potentially their relations with family members, peers, school and program personnel, employers, religious leaders, and others (Isralowitz & Reznik, 2015b; Isralowitz et al., 2017; Tesler et al., 2016). Specific short and long-term aims and intervention methods need to be defined and addressed, harmful misperceptions about alcohol use and binge

drinking corrected, and the consequences of illegal (e.g., underage drinking) and problem behavior understood and enforced. In theory this sounds great, however, in reality it is a challenge to address, especially when conflicting personal and economic interests are involved.

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