

Social Influences in Adolescents substance use: A Systematic Review

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ABSTRACT

Background: Adolescents is a sensitive developmental phase easily influenced by their surroundings. The substance use among adolescents is progressively increasing and has created a positive attitude towards it. This can lead to sexual assaults, criminality and involvement in illegal business contributing to great negative outcomes in adolescent and adulthood. **Method:** The following is a systematic review conducted as per preferred reporting items for systematic reviews and Meta-analysis (PRISMA) guidelines. The databases Google scholar and PubMed were searched in September 2020, from January 1, 2000 to August 31, 2020. The studies included were of paper-pencil/web surveys or part of larger longitudinal studies and were conducted mostly in schools and colleges. The study subjects were all adolescents to young adulthood group since the studies centered on social influential aspects such as peer influence, family aspects and culture or ethnicity correlation to substance use. The details were extracted from the published articles. **Findings:** Out of 60 studies identified, 23 were eligible and had 1, 45,070 patients in total. Peer/friend, parental/family and ethnic/culture influences were categorized and analyzed their relation to substance use in adolescents. The data were summarized descriptively and concluded by the evidence presented by the cumulative evidences. **Interpretation:** Peer influence leading to deviant peer association is the major cause of adolescent substance use. Lax parenting process with decreased association to culture leads to lack of support, acceptance and increased leisure time, contributing to adolescent susceptibility to peer pressure increasing substance use.

Keywords: Substance use, Adolescents, Peer influence, Parental influence, Ethnic influence, Peer pressure, Deviant peer association

INTRODUCTION

Adolescence is a developmental period, most dangerous, highly susceptible phase towards substance use. Unsupervised adolescents, peer substance use and availability of substances within schools have led to increased use [1]. Peer pressure is the strategy by which any group influence substance abuse by the value placed on popularity with the commensurate fear of rejection and possible isolation which are significant for adolescent group [2]. Also adolescents perceive deviant behaviour as bold, adventurous or tough, therefore enhanced acceptance among deviant peers [3]. The substance use initiations at younger ages have higher chances of developing lifelong substance dependence and can lead to deleterious impacts in adolescent life [4,5].

The following review assess the type of influences and factors related to adolescent substance use and how these influences increases peer pressure and deviant peer association contributing to increased substance use. It also gives an idea how to tackle the rise of substance use in adolescents due to peer influence.

METHODS

Search strategy and selection criteria

The following is a systematic review conducted as per PRISMA guidelines and the flow diagram is given in Figure 1. The inclusion criteria for the study was to assess the social influential aspects such as peer influence, family/parenting aspects and culture or ethnicity correlation to substance use in adolescents to young adulthood. The majorities were cross-sectional or parts of longitudinal studies conducted via paper-pencil/web survey and were mostly conducted in schools and colleges. Studies not pertaining to the influential aspects were excluded. The databases Google scholar and Pub Med were searched in September 2020, from January 1, 2000 to August 31, 2020. The terms searched for both databases included "substance use coercion", "substance dependence", "dipsomania", "substance abuse", "drug addiction" and "influence". No unpublished studies were considered and descriptive summary of data were included. The following study had no protocol.

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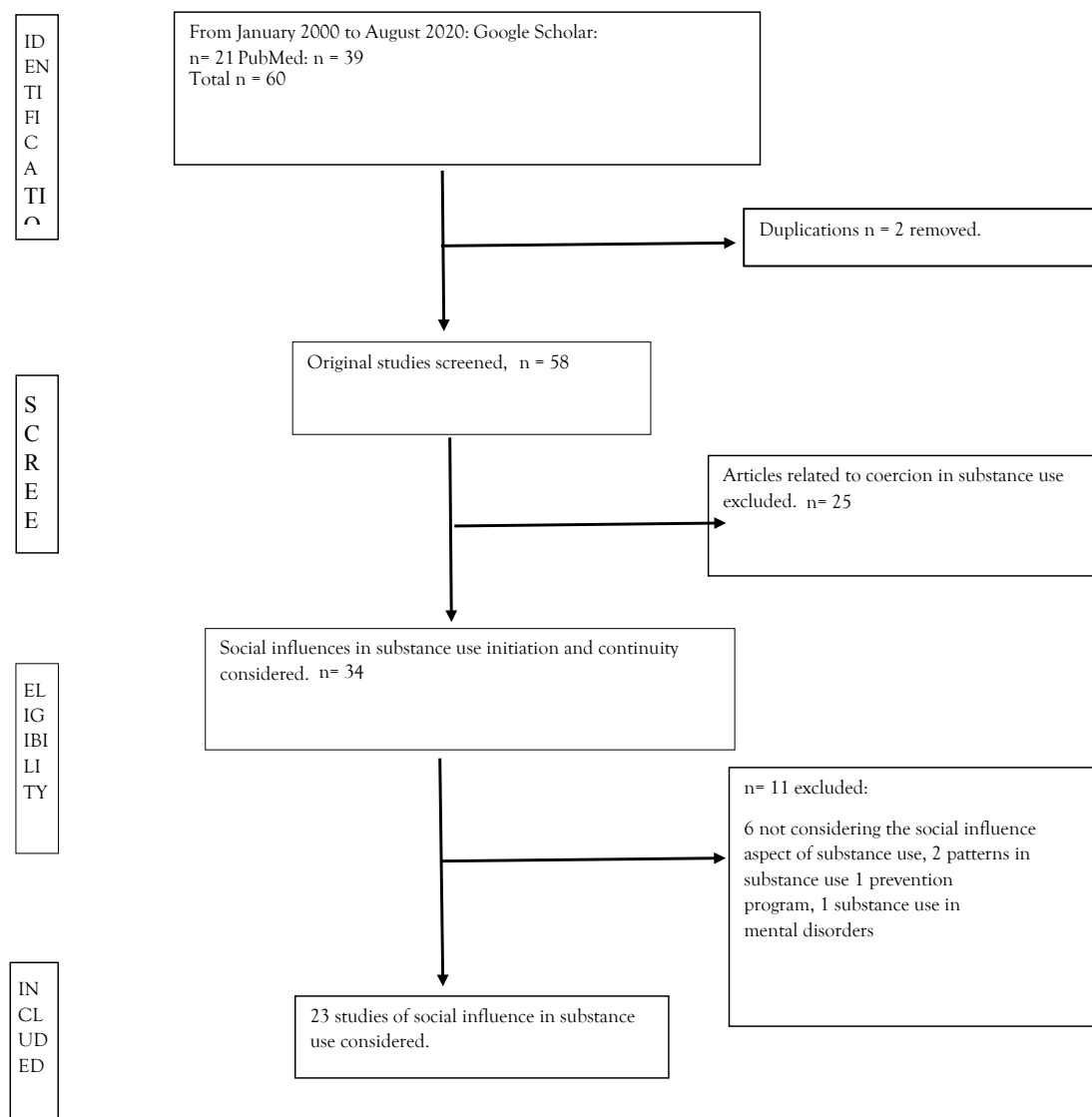


Figure 1: PRISMA flow diagram for the selection of articles included in the analysis.

Data analysis

The data were extracted manually by assessing the abstracts through the databases. Identified articles were downloaded and collected into Microsoft word document. Duplicated data were identified and removed manually between the processes of data analysis. All languages were considered but only a single study in Portuguese was eligible to be included in review. The English translated data was available online and considered. The total sample, age, gender, growth scale, ethnicity, type, assessment process in study, substance involved and source of influence were the variables considered.

RESULTS

Studies on influence in substance use of adolescents were less in the past two decades. studies on social influence in substance use had 1, 45,070 patients and were mainly categorized as peer/friends, parental/family and ethnicity/culture influence. Details of studies on influence in substance use are given in Table 1 respectively.

Peer/friends influence

Peer pressure and conformity strongly correlated to greater substance use than peer popularity. Similar peer pressure experienced by both gender but boys indulged in greater substance use due to peer

pressure [6,7]. Females were more likely to be connected to friends than males in school and a high level of connectedness to friends, for both gender were associated with increased substance use [8].

More friends and more time spent with friends predicted higher levels of peer influence for substance use in Asian-Americans and European-Americans [7]. In another study increasing cannabis use was only significant among girls but was associated with increased evenings out with friends, in both genders [9]. High school substance use in both gender were associated with increased use in college, irrespective of roommate's history of substance use. But no peer effects were seen for non-drinkers [10]. In a similar study, a strong evidence of peer effect on binge drinking was found for both drinkers and non-drinkers [11]. Binge drinking habit of both roommate and respondents, contributed to magnified binge drinking, but was statistically significant for males alone. Meanwhile another study demonstrated that roommate effect was significant and similar in magnitude in both gender.

The deviant friendship process in early adolescence led to substance use in middle adolescence which facilitated deviant friendships in late adolescence leading to further substance use in young adulthood. The interaction between deviant friendship process and substance use were statistically reliable for substance use in young adulthood [12]. Another study demonstrated that deviant peer

Table 1: Details of studies assessed for the review.

Author and Year of publication	Participants (Sample size and age)	Other Demographic details: (Ethnicity, Growth stage, Gender and country)	Type of study and assessment.	Substance Used	Influenced By
Santor D.A et al., 2000 ⁽⁶⁾	145 16-18 years	70% white, 25 % blacks and 5% of other ethnic groups, Adolescent 40 boys and 105 girls	Cross-sectional study conducted in high schools in 1998 by completing questionnaire supervised by two research assistants to assess peer pressure, popularity and conformity.	Alcohol, Cigarettes, Soft drugs (cannabis, hash, mushrooms, ecstasy, pain killers, tranquilizers, Ritalin, inhalants), Hard drugs (cocaine, crack, heroine, PCP mescaline, LSD)	Peer pressure/ popularity
Judith G.Au et al., 2000 ⁽⁷⁾	4,662 12-13 years	20% Asian-American, 80% European-American, Adolescent 2257 boys and 2405 girls, Los Angeles and San Diego (California), United States.	Data obtained from randomized Adolescent Alcohol Prevention Trial (Donaldson et al. 1995) conducted in public school. Alcohol/cigarette use, social/friend influence, ethnicity and family structure assessed by questionnaires.	Alcohol and Smoking	Peers/friends, Parents and family structure, Ethnicity
Dishion T.J, 2002 ⁽⁸⁾	201 13-14 to 22-23 years	90% European-American, Early adolescence to late adulthood male Pacific Northwest, Northeastern United States.	Longitudinal study of 15 years had sample recruited from two local schools in years 1983 to 1984 at fourth grade. Yearly assessments at ages 13-14, 15-16, 17-18 and 20-23 consisted of parent, son interviews, videotaped interaction tasks, school data and court record searches.	Alcohol, Tobacco, Cannabis, Hard drugs (cocaine, crack, speed, crank, methamphetamine, heroine and PCP)	Peer influence/ Deviant friendship process
Hussong A.M, 2003 ⁽⁹⁾	398 16-19 years	Caucasian, Adolescent 207 boys and 191 girls.	Cross-sectional study conducted Surveys in two public school and assessed on peer friendship quality, alcohol use, adolescents' own substance use, Marlowe-Crowne social desirability scale and Beck Depression Inventory	Alcohol, cannabis and other drugs	Positive and negative effects of friendship/ peers, Quality of friendship, Best friend substance use
Duncan G.J et al., 2005 ⁽¹⁰⁾	714 16-17 to 22-23 years	White, Black, Asian, Hispanic and others, Late adolescence to early adulthood 279 male and 435 female.	Longitudinal study with data obtained from students survey entering university in fall of 1998, 1999 and 2000 and after assigning a roommate a follow-up survey in 2002 administered via internet with a telephone follow-up.	Alcohol and Cannabis	Peer effect
Tyler K.A, 2006 ⁽¹¹⁾	40, 19-21 years	67.5% White, 20% African-American, 2.5% Hispanic, 10% Multiracial/biracial, Late adolescence to early adulthood 16 male and 24 female, Missouri, Iowa, Nebraska and Kansas, United States.	Study based on data obtained from semi-structured audio-taped interviews of homeless-emerging adults by experienced street interviewers to assess the substance use, which was part of a larger longitudinal study.	Alcohol, Cannabis and illicit drugs	Family, friends, acquaintance influence, Necessity of situation (living on street, stress)
Carter M, 2007 ⁽¹²⁾	643, 14-17 years	91.3% New Zealander European, 9.5% Māori, 2% Cook Island and 9% others, Adolescent 326 boys and 317 girls, Dunedin, New Zealand.	Cross-sectional study conducted by modified "Youth Risk Behavior Survey" (Kann 2001) in 11 high schools. Connectedness to family/friends and perception of school atmosphere assessed.	Alcohol, Cigarettes, Cannabis	Family, friends connectedness and school influence
Yen C.F et al., 2007 ⁽¹³⁾	200, 16-18 years	Taiwanese, Adolescents 128 boys and 72 girls, Juvenile abstinence center, Southern Taiwan	Cross-sectional Study was conducted from September 2003 to December 2005. Adolescent Family and Social Life Questionnaire, Tridimensional Personality Questionnaire and Questionnaire on Attitudes Towards Ecstasy use were assessed in participants.	Methylenedioxymethamphetamine (MDMA)	Family, peers group and individual factors
Agarwal A et al., 2007 ⁽¹⁴⁾	1,065, 16-23 to 20-29 years	85.9% Caucasian, 14.6% African -Americans Adolescent to young Adulthood women, Missouri, United States.	Data obtained from longitudinal study of Missouri Adolescent Female Twin Study (Heath et al., 2002) in 1994-1999 and follow up in 2002-2005 used in the following study. Questionnaire assessed the initiation and previous substance use of participants.	Cannabis use initiation, alcohol and cigarette	Parental, Peer and individual factors

Kuntsche E et al., 2009 ⁽¹⁵⁾	93,297, 15 years	Adolescent 44,502 boys and 48,795 girls, European and North American countries (31 countries included).	Data collected was part of the “Health Behavior in School-Aged Children (HBSC)” study conducted every 4 years from 1983. The present cross-sectional study collected data from 2001-2002 and 2005-2006 via questionnaire distributed in classrooms and assessed cannabis use and evening out with friends.	Cannabis	Peer influence (time spent with them)
Gazis N, 2010 ⁽¹⁶⁾	274, 12 to 16 years	43% Australians (Non-Indigenous), 32% Aborigines and Torres Strait Islanders, 15% Southeast Asian and Pacific Islanders (indigenous Australians) and 10% minorities, Early adolescent to adolescent 124 boys and 150 girls, Cairns (Queensland), Australia.	The cross-sectional study had data collected from surveys of year 8 and 9 students conducted over a 2-year period commencing in 2004 and part of Drug and Alcohol Abuse Prevention Program. Survey administered in 5 schools and assessed cultural identity by modified Multigroup Ethnic Identity Measure. Cultural label, substance use and friend's substance use were also assessed.	Alcohol, tobacco and Cannabis	Ethnicity/culture and Peer influence
Branstetter SA, 2011 ⁽¹⁷⁾	166, 14-16 years	71% Caucasian, 11% Hispanic, 9% African-American and 8% others, 75 Adolescents boys and 91 girls, Western United States.	The participants for the longitudinal study was obtained from multi-year study on relationships and adjustment in adolescence. Questionnaire were completed by both parents, friends and respondents for 2 consecutive years. A modified version of Network of Relationships Inventory for relationship quality, the Drug Involvement Scale for Adolescents for substance use and Youth Self-Report was used to assess friend's substance use.	Alcohol, tobacco, cannabis, cocaine, opiates, depressants, tranquilizers, hallucinogens, inhalants, stimulants, over-the-counter drugs and club drugs.	Friend substance use, Quality of friendship, parental-adolescent relationship.
Fujimoto K, 2012 ⁽¹⁸⁾	2,533, 12-19 years	21% Hispanic, 48% Non-Hispanic White, 12% African-American and 19% others, Adolescent 1266 boys and 1267 girls, United States.	Data from National Longitudinal Study of Adolescent Health (Add Health) from 12 high-schools collected in 1994-1995 with both in-school and in-home surveys. Assessed substance use, aspects of friend's influence and friendship intimacy.	Alcohol and Cigarettes	Friendship aspects and best friend influence
Cleveland MJ et al., 2012 ⁽¹⁹⁾	7,439 15-17 years	Adolescent 3987 girls and 3452 boys, Iowa and Pennsylvania, United States.	The data used in this cross-sectional study were obtained from the fifth and sixth waves of PROMoting School-community-university Partnerships to Enhance Resilience (PROSPER) which is an evidence based substance use prevention program. Questionnaire survey in schools assessed adolescents perceptions of parental knowledge, inductive reasoning scale, adolescent's perception of inconsistent discipline and substance use.	Alcohol, Cigarette and Cannabis	Parental influence
Van Ryzin MJ et al., 2012 ⁽²⁰⁾	998, 12 -23 years	42.3% European-Americans. 29.1% African-Americans, 6.8% Latinos 5.2% Asian-American, 16.4% of other ethnicity, Early adolescence to early adulthood 526 males and 472 females, Pacific Northwest, Northeastern United States.	The 11 year-span longitudinal study had participants their families enrolled for a randomized controlled trial of a family-based intervention project (Dishion and Stormshak 2007). The study assessed parental monitoring, family relationship quality, deviant peer association and substance use by questionnaires.	Alcohol, Tobacco and Cannabis	Peer and family influence
Loke AY, 2013 ⁽²¹⁾	805, 11-15 to 16-18 years	Adolescent 214 girls and 591 boys, Sham Sui Po district in Hong Kong	Cross-sectional study had collected data from 5 schools by in-school survey questionnaires under the supervision of member of research team. It assessed perception of family process, substance use, their parents and friends' substance use and acceptance and family process (structure, parenting style, support and interaction).	Alcohol, Cigarette and other illicit drugs	Family process, parenting styles and peer influence.

Mason MJ et al., 2013 ⁽²²⁾	17865, 12-17 years	60.2% Whites, 17.3% Hispanic, 13.2% Black, 9.3% others, Early adolescents to adolescent 9040 boys and 8825 girls, United States	Cross-sectional study obtained data from 2010 National Survey on Drug use and Health (NSDUH). The study assessed family structure, peer attitudes, race and gender to substances use.	Alcohol, Cigarette and Cannabis	Attitudes and perception of peer substance use
Eisenberg D et al., 2014 ⁽²³⁾	1641, Above 18 years	70% White, 17% Asians, 3% Blacks, 5% Hispanics, 2% others and 4% multiracial, Late adolescent 820 males and 821 females, United States.	The cross-sectional study collected baseline data by survey in August 2009 shortly before college began and follow-up survey was in March-April 2010 shortly before the end of academic year. The study assessed the roommates influence in substance use and their relationship to respondents	Alcohol, Cigarette, illicit drugs (cannabis, cocaine, heroin, methamphetamines, ecstasy and other stimulants)	Peer influence
McGloin JM et al., 2014 ⁽²⁴⁾	8010, 11-22 years	60% Whites and 40% others, Early adolescence to early adulthood male and females, United States.	The cross-sectional study used data from National Longitudinal Study of Adolescent Health (Add Health) collected in 1994-1995. The study assessed substance use, friends substance use, dissimilarity between schoolmates and friends substance use and density of friendship from the wave 2 in-home survey	Alcohol and Cigarettes	Dissimilarity in Friends and peer/schoolmates
McDonough MH, 2016 ⁽²⁵⁾	1940, 10-15 years	52 % European New Zealander, 30% Māori and 12% Pacific Islander, Early adolescent to adolescent 931 boys and 1009 girls, New Zealand.	Longitudinal cross-lagged study drew data from a larger longitudinal study of youth in New Zealand recruited from 78 schools and measured for 3 consecutive years. The present study took the data of the last two years. Questionnaires assessed negative peer influence (Jose 2015), peer connectedness (based on Barber et al., 2005) and substance use (adapted from Washington Healthy Youth Survey)	Alcohol, Cigarette Cannabis and other illegal drug use.	Peer influence
Mowen TJ, 2018 ⁽²⁶⁾	1,118, 18-69 years	37.2% Whites, 50.7% Blacks and 12.1% others, Late adolescent to adulthood men, United States.	Data from SVORI, a longitudinal study (Lattimore and Steffey 2010) collected between 2004 and 2007 consisted of participants from 14 states undergoing process of reentry after criminal offenses. The data were collected 15 days before release, 3, 9 and 15 months after release. The present study took data from wave 2, 3 and 4. Questionnaire assessed criminal offending, substance use, peer crime and peer support.	Tranquilizers, Cannabis, Stimulants, Hallucinogens, Sedatives, Inhalants, Heroin, Amphetamines and prescription pain relievers.	Peer influence
Herz V et al., 2018 ⁽²⁷⁾	25, 12-18 years	Adolescent 21 girls and 4 boys with psychiatric condition, Vienna, Austria	Cross-sectional study included participants of inpatient psychiatric unit at the medical university of Vienna sampled between May 2015 and April 2016. The study assessed lifetime use, initiation, frequency, quantity of substance used along with family structure and peer use from school surveys. Alcohol related behavior was detected by Cutting down, Annoyance by criticism, Guilty feeling, Eye-openers (CAGE) and nicotine consumption investigated by Fagerstrom Test of Nicotine Dependence (FTND).	Alcohol, Nicotine, Tobacco, Cannabis, Psychotropic drugs and other illicit drugs (MDMA, Heroin, Cocaine, amphetamines, Opioids)	Peer use and influence
Jorge KO et al., 2018 ⁽²⁸⁾	891, 15-19 years	Adolescents 352 boys and 539 girls, Belo Horizonte, Brazil.	Cross-sectional study enrolled students from 18 schools and collected data from August 2009 to February 2010 using questionnaires assessing substance use by modified Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) and peer influence by Integrated Questionnaire for the Measurement of Social Capital (IQ-MSOC).	Inhalants, Marijuana, Hypnotics, Crack, Cocaine, Hallucinogens, Amphetamines and Opioids (illicit drugs)	Opposite gender Peer influence,

associations were a risk factor for increased likelihood of substance use at age 12 to 17 and predictive of increased substance use in young adulthood (23 years). Substance use predicted higher levels of deviant peer association from age 13 to 15 and 2.5 times more likely to initiate cannabis use in individuals with prior alcohol use [13,14].

The substance use among friends and best friends led to higher stability of friendship and connectedness which facilitated further substance use [12,15,16]. 11 respondents out of 40 in a study, initiated substance use because of friends and acquaintances use as it has become a normal activity in the group [17]. 84.18% methylenedioxymethamphetamine (MDMA) users had friends with substance use [18]. Increased smoking and cannabis initiation occurred in both indigenous and non-indigenous Australians with 1 to 4 smoking/cannabis using friends [19]. 22.9% adolescent smokers had a friend who smoked, similarly alcohol users had, peers with drinking habits [20]. Dissimilarity between adolescent's friends and schoolmates smoking habit, lowered friend's influence on smoking. But in a strong friendship tie (80%) to friends, the dissimilarity did not reduce friend's influence. Similarly, the dissimilarity in drinking habit did not reduce the alcohol use influence of friends; instead a higher probability of drinking is predicted [21]. Adolescent affirming to risky patterns of nicotine or drug consumption had drug using peers [22]. Also opposite gender friends/partners had a stronger influence in substance use than same gender in young adulthood [17,23]. A positive peer attitude towards cannabis made it 1.6 times more likely to initiate its use [14]. Females were greatly and significantly influenced by peer attitudes on smoking. Close friend's attitudes towards substance use were strongly associated with the adolescent use of all substance [24].

In positive friendships, negative affect was associated with high substance use with less substance-involved peers and lower substance use with substance-using peers. But in less positive friendship, greater substance use with substance-involved peers identified. Substance use was high in individuals with negative friendship qualities than positive friendship qualities with substance using peers. Both positive and negative mood was associated with greater substance use in positive relationships with substance-using best-friend. The uninvolved of close friends in substance use creates a negative effect and positive friendship with substance using peers creates positive effects, both leading to increased substance use [15]. In another study considering the aspects of friendship, classified as mutuality, directionality and intimacy in friendship, the influence of mutual friends in drinking and smoking were higher than unreciprocated friends, but was significant only for smoking. Also in directionality of friendship the unreciprocated out-degree based influence was high for both drinking and smoking than close friend's use [25]. Also higher level of negative interaction with friend and lower levels of friendship was more frequent with tobacco use [16].

Greater negative peer influence predicted increased use of substances over time whereas greater substance use did predict negative influence but was inconsistent [26]. Low peer criminality and high peer support was significantly associated with decreased odds of substance use [27].

Family/parental influence

80% Asian-Americans had intact families and a low prevalence of adolescent substance use. Adults offering of alcohol to adolescence

were higher than peer offering [7]. In the 84.18% total MDMA users, 98.41% were from broken family [18]. Substance use occurred in 37 out of 40 homeless-emerging adults due to their family's substance use where 9 respondents had family members introduced the drugs and others had members who were either heavy drinkers or users [17]. Both adolescent smokers and alcohol users had a substance using family member. Majority drinkers and smokers lived with single parents and experienced less time, less support, higher conflicts and more control by parents. (20) Greater degree of support from mothers were significantly negatively correlated to less use of all substance and lower levels of support predictive of increased substance use [16].

Higher levels of parental knowledge and lower level of inconsistent discipline were associated with decreased likelihood of substance use in both their own children and other adolescents in their peer group. Parent's use of inductive reasoning may be indirectly related to adolescent substance use [28]. A high level of family connectedness had less tobacco smoking but a medium level of connectedness was associated with increased alcohol bingeing.

Parental monitoring at age 12 to 13 and greater family relationship quality at 14 to 17 years were associated with lower likelihood of substance use. At age 15, deviant peers stronger predictor than family relationship quality whereas at 17, family relationship quality and deviant peer equally strong. In early adulthood, deviant peer association were strong predictor than parenting aspects. Tobacco use predicted reduced parental monitoring and family relationship quality [13,23]. In older adolescents the absence of parents at home has increased substance use. (24) Also higher parental supervision and attachments had lower levels of drinking in adolescence [21].

Ethnicity/culture influences

European-Americans had 2.75 times more peer influence than Asian-Americans with significantly lower substance use. Abstinence from alcohol and cigarette use were reported 60% and 76% in Asian-Americans and 34% and 66% in European-Americans [7]. Cultural context such as living on streets had daily struggles including lack of bathroom, food, money, shower, and sleep, leading to substance initiation as it makes the life bearable. A respondent accounts that he was coerced into smoking cannabis for a place to stay [17].

Cultural identity protective of non-indigenous alcohol and cannabis use, indigenous alcohol use and other minorities' cigarette use. Exception is seen in indigenous smoking which was high, as part of culture. Abstinence from cannabis and alcohol use in non-indigenous adolescents were seen with high score in affirmation/belonging to culture [19].

White adolescents had greater smoking and alcohol use, (21) with high female users while black males used more cannabis. The stronger influence of peer attitude on substance use for whites was driven by weaker influence of peer attitudes in cigarettes, alcohol and cannabis for Hispanics and cannabis use for blacks [24]. Adolescents with important friends involved in religious and sports/cultural activities had decreased chances of illicit drug use [23].

DISCUSSION AND CONCLUSION

Early and middle adolescents are especially vulnerable to peer pressure as they strive towards peer approval and acceptance [29]. In this process of fitting into a peer group, they engage in high risk

behaviours such as experimenting with substances [5]. The peer conformity towards the attitudes of popular friends may be due to perceived or anticipated social rewards. Though the popularity of peers can influence the peer norms, conformity to a certain friendship group leads to less inclination to peer pressure from the popular peers [30]. Thus peer pressure and conformity correlates to higher substance use than peer popularity [6].

Both genders experienced similar peer pressure but males were more susceptible as to fit into the stereotype that links with masculinity and risk taking behaviour whereas adolescent females consider how the risky behaviours might jeopardize other valued relationships with parents, teachers and friends [6,29]. Females have high connectedness to peers (8) as it is based on intimacy and physical proximity [31]. The peer connection is not just social but psychological, as having a peer audience turns on the reward system area of adolescent brain [2]. The more connectedness and more time spent with friends leads to higher peer influence and higher substance use, irrespective of gender [7-11] as unstructured time with peers conducive of delinquency, as the deviant acts become easier and rewarding [30]. Adolescents with single parents, European-Americans and MDMA users with less intact family structure had high substance use [7,18,20]. This is because intact families have higher perceived family mutuality, communications, less conflict. Absence of second parent possibly results in lowered social capital. Therefore more time and effort were required to maintain this social capital, might also experience more financial crisis and psychological distress which potentially lead to declined parenting capacity [31,32]. The Asian-American culture might be protective of adolescents substance use by substance use taboo and intact family structure, similarly increased connectedness to indigenous and non-indigenous Australian culture protective of substance use [19] but in both cases peer use increased substance use, suggestive of strength of peer influence greater than ethnic influence. Other reasons for substance use in Asian-American might be identity or culture clash or stress associated with acculturation [33].

As adolescents associate more to their peers, the peer influence were stronger than adult influence [7]. A high family connectedness reduced substance use as adolescents does not want to risk the relationship with family. Also higher level of connectedness to school atmosphere reduced substance use, as it provided rewarding experiences, positive relationships, learning and improved mental health [8,34]. Therefore high connectedness with family and school correlated to the well-being of the adolescence and less substance abuse than peer connectedness [35]. Adolescents with more peers involved in religious or sports activities demonstrated less substance use, as it is a leisure activity and involving in scheduled cultural activities may decrease unscheduled time [28]. The presence of coaches/ adult supervision can also help maintain discipline [36]. Prior habit of substance use in school lead to increased use in college with or without peer influence [10,11]. A 2005 study demonstrated no peer effect for non-drinkers but was significant only for male drinkers and a similar study in 2013 demonstrated significant peer effect in non-drinkers of both gender [11]. It shows how the peer influence has become stronger over the years in late adolescent to young adult group.

A tri-directional relationship exists between deviant peer associations/negative peer influence, substance use, parental monitoring and family relationship quality [12,13,26]. As peer acceptance becomes more important, the deviant peer group exerts great influence on substance use and vice-versa [5].

Parental monitoring at early adolescence can reduce deviant peer association, substance use and improve family relationship quality whereas in middle adolescence deviant peers association determines substance use. In late adolescence strength of family relationship quality protective of deviant peer and substance use [13]. In adulthood substance use solely based on deviant peer influence/peer criminality and less peers support [13,27]. High supervision and attachments to parents reduce substance use in older adolescents [21,24] as it keeps in check the deviant peer influence. Similarly less support and more control/authority from the parents leads to increased substance use, [16,20] as high level of family functioning and behavioral control associated with positive educational and psychological outcomes whereas higher level of psychological control was related to negative outcomes [32]. This is equally applicable to peer parenting aspects such as good parental knowledge of child's whereabouts and low inconsistent discipline, protective of deviant peer association and substance use in whole friendship network [28]. Substance use at young age had a higher chance of initiating other substances in adolescence and adulthood, [13,14] because of increased deviant peer association due to early initiation, dependence and experimenting of substances.

Substance use among friends/peers, family and positive attitude of peers has led to increased substance use [8,14-18,20,22,24]. The peer/family substance use becomes a role model to imitate especially with pressure or support. Close friend/peer substance use can change the beliefs and attitudes towards drug use and a positive attitude of users makes the non-users less hesitant to use [5]. The adolescent substance use depends on the density of friendship and negative effects in a positive friendship push the adolescents to be different from their peer's habits [15,20]. Positive/negative friendship qualities and negative interactions with substance using friends increase substance use. [15,16] The influence of mutual friends and unreciprocated out-degree based influence in substance use were high. (25) This demonstrates that extreme peer orientation could sacrifice developmentally positive aspects to maintain the relationships, even abandon parental influence in favour of peer influence [29]. The whites were more involved in substance use with females more influenced by the peer attitudes than Hispanics or blacks [21,24]. This may be due to increased social connectedness and necessity of being part of peer groups more important for whites than other races.

The substance use influenced by the opposite gender shows the role of potential romantic/casual partners induced substance abuse [17,23]. Females involve in such activities to impress or be "cool" or due to pressure from partners [29]. This might create an opportunity for sexual exploitation. Also street life leading to substance use can be summarized to survival tactic or normal routine or to cope with the struggles of street life [17].

Peer pressure/influence and deviant peer associations' were major contributors in adolescent substance use and vice-versa, which have progressed throughout the years. The parental/family and ethnic/culture shortcomings contributed to increased peer influence. Positive relationships that stem from good parenting process, family, culture/ethnicity and school connectedness can provide acceptance, support and guidance leading to positive psychological outcomes and improved mental health in adolescents. Decreasing substance use in families and influencing the attitudes of peers about substance use, also engaging adolescent and peer in extra-curricular activities reducing unstructured time can contribute to decreased effect of peer pressure and need for acceptance/

associations from deviant peers which leads to reduced substance use.

Therefore to disseminate substance use in adolescents, approaches that includes building good connectedness to family, culture and schools in younger age, counselling parents in sorting out good parenting process, awareness of substance use harm, inspiring adolescents to identify and engage in their passions, can remove factors that make them susceptible to peer influences. Further studies that focus on this methods and its effectiveness in adolescent substance use should be conducted.

CONFLICTS OF INTEREST

I declare no competing interests.

RESEARCH IN CONTEXT

Evidence before this study

When considering the social influential aspects the previous studies examined the independent association between adolescent substance use and a need for cumulative evidence was overdue. The Google Scholar and Pub Med databases were searched in September 2020, from January 1, 2000 to August 31, 2020 with terms such as “substance use coercion”, “substance dependence”, “dipsomania”, substance abuse”, “drug addiction” and “influence”. Studies pertaining to influential aspects leading to adolescent substance use was included without language barrier. The bias predominantly involved were cross-sectional design and self-report by respondents.

Added value of study

The study gives an insight into how influential aspects are interconnected with each other, the underlying reasons for their occurrences and how they increase substance use and its initiation within adolescent groups. It also adds certain solutions in tackling the problem.

Implications of all the evidence

The amount of studies related to such a significant matter was less in last two decades and the evidences demonstrates a rise in substance use within the population. This review calls for an importance in conducting a recent study related to social influence in substance use and to give primary importance to the relation between influential aspects and the root causes as I believe that treating the root cause can reduce the spread of substance use and help the adolescent groups from a disastrous life path.

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