

Supplementary table of characteristics of individual studies, adjustment type, and type of cannabis

Balancing risks and benefits of cannabis use: umbrella review of meta-analyses of randomised controlled trials and observational studies

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eTable 6: Single studies included in the meta-analyses included in the umbrella review on health outcomes of cannabis and cannabinoids in humans

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Case-control studies					
Asbridge, 2013 ¹	Cannabis	NR	Recreational	Within-person design, other drugs	8
Bartholomew, 2010 ²	Cannabis	NR	Recreational	age, strategy use, mood and other recreational drug use	7
Battisti, 2010 ³	Cannabis	NR	Recreational	age	6
Beautrais, 1999 ⁴	Cannabis	NR	Recreational	adjusted for socio-demographic and childhood factors, psychiatric comorbidity	9
Bedard, 2007 ⁵	Cannabis	NR	Recreational	age, sex, and prior driving record	7-8
Bourque, 2013 ⁶	Cannabis	NR	Recreational	unadjusted	6
Bowman, 1973 ⁷	Cannabis	NR	Recreational	unadjusted	5
Chye, 2017c ⁸	Cannabis	NR	Recreational	gender, age, IQ, GAF, BDI, STAI-T, CAPE weighted frequency, tobacco use, alcohol use, and total intracranial volume	9
Chye, 2018 ⁹	Cannabis	NR	Recreational	ICV, age, IQ and monthly alcohol and tobacco	9
Croft, 2000 ¹⁰	Cannabis	NR	Recreational	unadjusted	4
Cunha, 2013 ¹¹	Cannabis	NR	Recreational	Gender, age	8
Cuyas, 2011 ¹²	Cannabis	NR	Recreational	unadjusted	5
Dafters, 2004 ¹³	Cannabis	NR	Recreational	alcohol, amphetamine, cocaine and LSD use	4
Di Forti, 2019 ¹⁴	Cannabis	NR	Recreational	age, gender, and ethnicity, level of education, employment status, tobacco, stimulants, ketamine, legal highs, and hallucinogenics	9
Drummer, 2004 ¹⁵	Cannabis	NR	Recreational	drug type, driver's gender, driver's age, type of accident, location of the crash and year of crash	9
Ferraro, 2013 ¹⁶	Cannabis	Inhaled	Recreational	gender, mother tongue, ethnicity and years of education	9
Fischer, 2015 ¹⁷	Cannabis	NR	Recreational	Unadjusted	6
Fisk, 2008 ¹⁸	Cannabis	NR	Recreational	units of alcohol,	6
Gjerde, 2011 ¹⁹	Cannabis	NR	Recreational	gender, age, season of the year, and time of the week	9
Gmel, 2009 ²⁰	Cannabis	NR	Recreational	NR	7
Gonzalez-Pinto, 2016 ²¹	Cannabis	NR	Recreational	sex, age, occupation, educational level, civil status, alcohol and tobacco consumption, and IQ, occupation, educational level, alcohol, tobacco consumption and estimated premorbid IQ	9
Gouzoulis-Mayfrank, 2000 ²²	Cannabis	NR	Recreational	age, sex, and education	5
Hels, 2013 ²³	Cannabis	NR	Recreational	Age, gender and country	8
Jacobsen, 2007 ²⁴	Cannabis	NR	Recreational	Parental education, baseline symptoms of depression	9
Jockers-Scherübl, 2007 ²⁵	Cannabis	NR	Recreational	Age, premorbid IQ, nicotine	9
Koenders, 2014 ²⁶	Cannabis	NR	Recreational	intracranial volume, mean cortical thickness weighted by surface area and total surface area, age and slice thickness	8
Krysta, 2012 ²⁷	Cannabis	NR	Recreational	unadjusted	7
Kuypers, 2012 ²⁸	Cannabis	NR	Recreational	gender, age and time period of accident (cases)/sampling (controls)	9

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Laumon, 2005 ²⁹	Cannabis	NR	Recreational	age, vehicle type, crash time, amphetamines, cocaine, sex	9
Li, 2013 ³⁰	Cannabis	NR	Recreational	unadjusted	8
Lowenstein, 2001 ³¹	Cannabis	NR	Recreational	Age, gender, time of ED arrival, day of the week, reported seat belt use, vital signs, Glasgow Coma Scale score, and ED disposition	9
Maremmani, 2004 ³²	Cannabis	NR	Recreational	Unadjusted	7
Martin, 2017 ³³	Cannabis	NR	Recreational	age, gender, vehicle category, time of accident	9
Mathijssen, 2005 ³⁴	Cannabis	NA	Recreational	unadjusted	7-8
Moreno-Alcaraz, 2018 ³⁵	Cannabis	NR	Recreational	unadjusted	8
Movig, 2004 ³⁶	Cannabis	NR	Recreational	age, gender, alcohol, amphetamines, benzodiazepines, cannabis, cocaine, opiates, season, and time of day	9
Mura, 2003 ³⁷	Cannabis	NR	Recreational	unadjusted	7-8
Peralta, 1992 ³⁸	Cannabis	NR	Recreational	unadjusted	6
Poulsen, 2014 ³⁹	Cannabis	NR	Recreational	age, gender, multiple vehicle crashes (MVC) vs. single vehicle crashes (SVC), licence status (full vs. restriction), vehicle type (car, motorcycle, truck), road class (urban, state highway, rural), blood alcohol levels, any drugs other than cannabis or alcohol	9
Pulido, 2011 ⁴⁰	Cannabis	NR	Recreational	unadjusted	NA
Rehman, 2007 ⁴¹	Cannabis	NR	Recreational	unadjusted	8
Rentzsch, 2011 ⁴²	Cannabis	NR	Recreational	gender, age, education level, nicotine use and relationship status	9
Sanchez-Torres, 2013 ⁴³	Cannabis	NR	Recreational	Age, gender, years of education	9
Schacht, 2012 ⁴⁴	Cannabis	NR	Recreational	ICV and tobacco use	9
Scholes, 2010 ⁴⁵	Cannabis	NR	Recreational	Age, education, cotinine level, number of days of alcohol use in the previous 30 days (alcohol30), number of caffeinated drinks in the previous 24 h (caffeine number today) and average number of caffeinated drinks per day (average caffeine)].	9
Becker, 2014 ⁴⁶	Marijuana	NR	Recreational	Sex, IQ, and alcohol	7
Block, 1993 ⁴⁷	Marijuana	NR	Recreational	Age, use of alcohol, cocaine, amphetamines, LSD, psychedelics other than LSD, heroin, narcotics other than heroin, tranquilizers, amyl or butyl nitrites, barbiturates, methaqualone, and phencyclidine	7
Block, 2002 ⁴⁸	Marijuana	NR	Recreational	unadjusted	4
Blows, 2005 ⁴⁹	Marijuana	NR	Recreational	age, gender, ethnicity, education level, passenger carriage, driving exposure and time of day	7-8
Carlin, 1977 ⁵⁰	Marijuana	NR	Recreational	age, education, and Wechsler-Bellevue Full Scale IQ's	4
Chang, 2006 ⁵¹	Marijuana	NR	Recreational	drug-use status	6
Daling, 2009 ⁵²	Marijuana	Inhaled	Recreational	age, reference year, alcohol use, current smoking, and history of cryptorchidism	9
Dougherty, 2012 ⁵³	Marijuana	NR	Recreational	unadjusted	4
Filbey, 2014 ⁵⁴	Marijuana	NR	Recreational	Tobacco and alcohol	9
Filbey, 2015 ⁵⁵	Marijuana	NR	Recreational	IQ, gender, number of drinks per occasion, ADHD symptoms and age	9
Gillison, 2008 ⁵⁶	Marijuana	NR	Recreational	Race, tobacco, alcohol, tooth Loss, frequency of tooth brushing, number of	9

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
				oral sex partners,	
Hashibe, 2006 ⁵⁷	Marijuana	Inhaled	Recreational	age and gender, ethnicity, educational level, alcohol consumption, cigarette smoking,	8
Hayes, 1988 ⁵⁸	Marijuana	Inhaled	Recreational	Education of the mother, number of ganja cigarettes smoked per week (prenatal), alcohol use (prenatal), tobacco use (prenatal), maternal health during pregnancy, participation in community life, passive exposure of baby to ganja smoke, financial support, conjugal union, maternal appetite during pregnancy. and maternal age at first marijuana smoke	5
Kung, 2003 ⁵⁹	Marijuana	NR	Recreational	age, race, education, and living arrangement, firearm accessibility, depressive symptoms, mental health services	6
Lacson, 2012 ⁶⁰	Marijuana	Inhaled	Recreational	history of cryptorchidism; education; religiosity	9
Li 2017 ⁶¹	Marijuana	NR	Recreational	age, sex, and previous driving history within the past 3 y; crash, license suspension, driving while impaired conviction, and speeding conviction	9
Liang, 2009 ⁶²	Marijuana	Inhaled	Recreational	age and gender, race, education, HPV 16 serology, family history of cancer, smoking pack-years, and average alcohol drinks per week	9
Lyons, 2004 ⁶³	Marijuana	NR	Recreational	Unadjusted	7
Palacio, 2007 ⁶⁴	Marijuana	NR	Recreational	Psychiatric disorders	9
Rosenblatt, 2004 ⁶⁵	Marijuana	Inhaled	Recreational	sex, education, birth year, alcohol consumption, and cigarette smoking	
Trabert, 2011 ⁶⁶	Marijuana	NR	Recreational	age, race, prior cryptorchidism, cigarette smoking, and alcohol intake	9
Woratanarat, 2009 ⁶⁷	Marijuana	NR	Recreational	Number of drugs use, Alcohol, Years of driving, Timing of driving, Duration of non-stop driving	9
Zhang, 2015 ⁶⁸	Marijuana	Inhaled	Recreational	age, sex, race, highest education, status of tobacco smoking (never vs. ever) and pack-years of tobacco smoking (continuous)	7
Cohort studies					
Arendt, 2013 ⁶⁹	Cannabis	NR	Recreational	age, comorbid use of opioids, and lifetime injection drug	9
Arseneault, 2002 ⁷⁰	Cannabis	NR	Recreational	childhood psychotic symptoms, other drug use, socioeconomic status and sex.	9
Auther, 2015 ⁷¹	Cannabis	NR	Recreational	age at baseline, gender, SOPS positive symptom total, SOPS negative symptom total, and use of alcohol and drugs other than cannabis	9
Baeza, 2009 ⁷²	Cannabis	NR	Recreational	Age, socioeconomic status	8
Barbeito, 2013 ⁷³	Cannabis	NR	Recreational	unadjusted	7
Barrowclow, 2015 ⁷⁴	Cannabis	NR	Recreational	treatment group, age, gender, stable living, ethnicity, higher education, employment, socioeconomic status, drug attitude inventory, alcohol use above safe levels (at each time point), any other substance use (at each time point)	8
Beard, 2006 ⁷⁵	Cannabis	NR	Recreational	Age, gender	8
Bovasso, 2001 ⁷⁶	Cannabis	NR	Recreational	age, gender, antisocial symptoms, marital status, race, school grade, household income, stressful life events, chronic mental health treatment at baseline, psychiatric symptoms, substance abuse	9
Brown, 2010 ⁷⁷	Cannabis	NR	Recreational	demographic, mental health and personality variables	8
Caspari, 1999 ⁷⁸	Cannabis	NR	Recreational	unadjusted	7

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Caspi, 2005 ⁷⁹	Cannabis	NR	Recreational	drugs other than cannabis, adult use of amphetamines and hallucinogens, childhood psychotic symptoms, before onset of cannabis use, childhood IQ, adolescent conduct disorder	8
Clarke, 2014 ⁸⁰	Cannabis	NR	Recreational	unadjusted	5
Coldham, 2002 ⁸¹	Cannabis	NR	Recreational	premorbid functioning, age, family involvement and cannabis use at 1-year	8
Cousijn, 2013 ⁸²	Cannabis	NR	Recreational	Baseline weekly use, approach-bias, working-memory network response strength	8
De la Serna, 2010 ⁸³	Cannabis	NR	Recreational	Age, socioeconomic status	8
Degenhardt, 2012 ⁸⁴	Cannabis	NR	Recreational	Background factors, alcohol use, other illicit drug	9
DeRosse, 2010 ⁸⁵	Cannabis	NR	Recreational	sex, race, parental socioeconomic status, family history of psychotic illness	8
Faridi, 2012 ⁸⁶	Cannabis	NR	Recreational	unadjusted	7
Feingold, 2016 ⁸⁷	Cannabis	NR	Recreational	sex, age, educational level, household income, marital status, urbanity and region, adjustment for 12-month alcohol use disorders and other (non-cannabis) substance use disorders, 12-month diagnosis of additional psychiatric disorders at baseline	7
Fergusson, 1996 ⁸⁸	Cannabis	NR	Recreational	family functioning; association with delinquent or substance using peers at age 15 years; cigarette smoking (15 years); family history of alcohol/drug abuse/dependence; most alcohol consumed (15 years); gender; self-report offending; conduct/oppositional disorders; conduct problems; truancy; alcohol problems; IQ; plans for future secondary education; intentions to enter anxiety disorders; depression suicidal ideation	8
Fergusson, 2001 ⁸⁹	Cannabis	NR	Recreational	age, gender, socioeconomic status, family conditions, early life experiences, psychological stress, substance abuse, family history of mental illness, stressful life events, and personality factors	9
Fergusson, 2002 ⁹⁰	Cannabis	NR	Recreational	Adverse life events, Deviant peer affiliations, Age of leaving school, Age of leaving home, Alcohol abuse/dependence	7
Fergusson, 2003 ⁹¹	Cannabis	NR	Recreational	psychotic symptoms, nicotine, alcohol and other illicit drug dependence, major depression and anxiety disorders, deviant peer affiliations, exposure to adverse life events, and age of leaving the family home, gender, parental ages, parental education levels, family socio-economic status, family living standards, frequency of parental change, parental conflict, adverse family life events, quality of parental attachments, exposure to childhood sexual or physical abuse, parental mental health, parental alcohol problems, parental drug use, parental criminality, childhood, neuroticism, novelty seeking, child IQ, educational achievement, history of substance use/abuse, and psychiatric disorder prior to 16 years.	7
Fergusson, 2005 ⁹²	Cannabis	NR	Recreational	gender; parental education; family socio-economic status; family living standards; changes of parents; parental alcohol problems; parental illicit drug use; parental depression/anxiety; parental criminality; childhood sexual abuse; childhood physical abuse; neuroticism; novelty seeking; self-esteem; parental attachment; child IQ, prior psychotic symptoms; prior	7

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
				frequency of cannabis use; concurrent and prior mental disorders (major depression, anxiety disorders, alcohol dependence, nicotine dependence, illicit drug dependence, conduct disorder/aspd); adverse life events; deviant peer affiliations.	
Fergusson, 2008 ⁹³	Cannabis	NR	Recreational	Risky driving behaviours, Annual distance driven., Driver attitudes, Driver experience	9
Gage, 2015 ⁹⁴	Cannabis	NR	Recreational	family history of depression, gender, urban dwelling, maternal education, borderline personality, IQ at age 8, PEs at age 12, conduct disorder trajectory group membership, peer problems, bullied, cigarette use, alcohol use, other illicit drug use,	8
Gargari, 2012 ⁹⁵	Cannabis	NR	Recreational	unadjusted	7
Georgiades, 2007 ⁹⁶	Cannabis	NR	Recreational	family SES, single parent home, family functioning	7
Gerberich, 2003 ⁹⁷	Cannabis	NR	Recreational	age; race; education; marital status; body mass index; diagnosed medical conditions; smoking status; and alcohol use	9
Gibson, 1983 ⁹⁸	Cannabis	NR	Recreational	Age, parity	7
Gonzalez-Pinto, 2010 ⁹⁹	Cannabis	NR	Recreational	Country, age group, sex; manic or mixed episode at baseline, rapid cyler (yes / no); work impairment (some / none); no medication taken before baseline; alcohol abuse / dependence between baseline and 12 weeks; cannabis abuse / dependence between baseline and 12 weeks; other substance abuse / dependence between baseline and 12 weeks; adherence at baseline; lithium taken at 12 weeks; anticonvulsant taken at 12 weeks; typical antipsychotic taken at 12 weeks; olanzapine taken at 12 weeks; risperidone taken at 12 weeks; other atypical antipsychotic (than olanzapine and risperidone) taken at 12 weeks; antidepressant taken at 12 weeks; sedative, (benzodiazepines and / or hypnotics) taken at 12 weeks; anticholinergic taken at 12 weeks; and type of medication taken at 12 weeks (monotherapy / combination / no medication).	9
Gonzalez-Pinto, 2011 ¹⁰⁰	Cannabis	NR	Recreational	gender, age, civil status, stopping other drug use and stopping alcohol abuse.	9
Gray, 2010 ^{101,102}	Cannabis	Inhaled	Recreational	race, gestational age, cannabispositive meconium, and tobacco-positive meconium on birth weight	8
Greer, 2014 ¹⁰³	Cannabis	NR	Recreational	unadjusted	6
Hadjiefthyvoulou, 2011 ¹⁰⁴	Cannabis	NR	Recreational	unadjusted	6
Hancox, 2015 ¹⁰⁵	Cannabis	NR	Recreational	tobacco smoking, asthma diagnosis, and sex	8
Harder, 2008 ¹⁰⁶	Cannabis	NR	Recreational	demographic, socioeconomic status, other drug use, childhood disturbances of psychological well-being, parental monitoring, and behavioral intervention status variables	8
Hatch, 1986 ¹⁰⁷	Cannabis	NR	Recreational	parity, cigarette smoking, and gestational age	9
Henquet, 2005 ¹⁰⁸	Cannabis	NR	Recreational	age, sex, socioeconomic status, urbanicity, childhood trauma, predisposition for psychosis at baseline, and use of other drugs, tobacco, and alcohol, cannabis use at baseline	9

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Henquet, 2006 ¹⁰⁹	Cannabis	NR	Recreational	age, sex, educational level, ethnicity, single marital status, neuroticism, use of other drugs, use of alcohol, depressive symptoms and manic symptoms at baseline	9
Jones, 2005 ¹¹⁰	Cannabis	NR	Recreational	Gender, Km driven per week, Perceived accident risk, num, drugs ever used, dependent, age of first use,	5
Korver, 2010 ¹¹¹	Cannabis	NR	Recreational	gender	7
Kovaszny, 1997 ¹¹²	Cannabis	NR	Recreational	gender	6
Kuepper, 2011 ¹¹³	Cannabis	NR	Recreational	Age, sex, socioeconomic status, other drugs, childhood trauma, urban/rural environment	9
Kumra, 2012 ¹¹⁴	Cannabis	NR	Recreational	age, sex, and WRAT reading scores	8
Leeson, 2011 ¹¹⁵	Cannabis	NR	Recreational	Premorbid IQ	9
Linszen, 1994 ¹¹⁶	Cannabis	NR	Recreational	Age, sex, alcohol	8
Longo, 2000 ¹¹⁷	Cannabis	NR	Recreational	unadjusted	7-8
Mackie, 2012 ¹¹⁸	Cannabis	NR	Recreational	demographics, depression, cigarette, alcohol, other illicit drug use and previous psychotic experiences	9
Manrique-Garcia, 2012 ¹¹⁹	Cannabis	NR	Recreational	prior personality disorders at conscription, IQ, disturbed behavior in childhood, social adjustment, risky use of alcohol, smoking, early adulthood degensocioeconomic position, use of other drugs, brought up in a city	9
Marmorstein, 2011 ¹²⁰	Cannabis	NR	Recreational	Depression at baseline, gender, psychosocial failure, occupational failure, crime	8
Martinez-Arevalo, 1994 ¹²¹	Cannabis	NR	Recreational	unadjusted	7
Mata, 2008 ¹²²	Cannabis	NR	Recreational	Age, gender, sex	8
McCleery, 2006 ¹²³	Cannabis	NR	Recreational	Unadjusted	7
McGrath, 2010 ¹²⁴	Cannabis	NR	Recreational	Sex, age, parental mental illness, hallucinations	8
Meier, 2012 ¹²⁵	Cannabis	NR	Recreational	IQ	8
Meier, 2016 ¹²⁶	Cannabis	NR	Recreational	sex	9
Meier, 2018 ¹²⁷	Cannabis	NR	Recreational	IQ, sex, and adjusted for the non-independence of observations (twins nested within twin pairs) by using the SURVEYREG procedure in SAS	9
Mokrysz, 2016 ¹²⁸	Cannabis	NR	Recreational	maternal education, child sex, maternal depressive symptoms during pregnancy and up to eight months postnatal, depression items of the Crown-Crisp experiential index, alcohol use, cigarette, hyperactivity and conduct problems at age 11, mother suspected truancy at age 14, depressive symptoms at age 12, psychotic-like symptoms at age 12, cumulative cigarette use self-reported at age 15, cumulative alcohol use self-reported at age 15, ketamine, LSD, cocaine, ecstasy, amphetamine and inhalants, self-reported at age 15	9
Mustonen, 2018 ¹²⁹	Cannabis	NR	Recreational	prodromal symptoms, other substance use and parental psychosis, frequent alcohol use, daily tobacco smoking	9
Najman, 2005 ¹³⁰	Cannabis	NR	Recreational	unadjusted	7
Nordmann, 2018 ¹³¹	Cannabis	NR	Recreational	body mass index, current or lifetime exposure to lamivudine/zidovudine and hazardous alcohol consumption	9

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Patton, 2002 ¹³²	Cannabis	NR	Recreational	parental separation, parental education, current smoking, frequency of drinking, and use of other illicit drugs.	9
Pedersen, 2008 ¹³³	Cannabis	NR	Recreational	Fathers work situation, Parental divorce, Parental smoking, Parental alcohol problems, Parental support, Parental monitoring, Early pubertal maturation, Level school marks, Conduct problems, Daily smoking, Alcohol problems, age 21 years, Full secondary education, age 21 years, Living on social security, age 21 years	5
Price, 2009 ¹³⁴	Cannabis	NR	Recreational	age, family economic status, parental occupation, parental use of psychotropic medication, psychiatric diagnosis at the time of conscription, IQ score, tobacco use, alcohol and other drug use, problem behaviour during childhood, psychological adjustment, and social relations	8
Pritchard, 2019 ¹³⁵	Cannabis	NR	Medical	unadjusted	7
Rasic, 2013 ¹³⁶	Cannabis	NR	Recreational	age, gender, school mark, family living situation, and alcohol use	7
Roberts, 2010 ¹³⁷	Cannabis	NR	Recreational	age, ethnicity, and gender	5
Rodriguez-Sanchez, 2010 ¹³⁸	Cannabis	NR	Recreational	Baseline performance, social, academic domain	8
Romano, 2017 ¹³⁹	Cannabis	NR	Recreational	Gender, age	8
Ross, 2020 ¹⁴⁰	Cannabis	NR	Recreational	sex and premorbid IQ	9
San, 2012 ¹⁴¹	Cannabis	NR	Recreational	unadjusted	7
Sara, 2014 ¹⁴²	Cannabis	NR	Recreational	age, gender and diagnostic subtype	9
Saurel-Cubizolles, 2014 ¹⁴³	Cannabis	NR	Recreational	demographic and social risk factors, body mass index, tobacco, alcohol,	8
Schimmelmann, 2012 ¹⁴⁴	Cannabis	NR	Recreational	unadjusted	7
Silins, 2014 ¹⁴⁵	Cannabis	NR	Recreational	School problems (excluding social), Conduct disorder, Attentional problems, Smoked 3+ cigarettes in life, Drank 3+ alcoholic drinks in life, Other illicit drug use before age 17 years, Maximum mean depression score, Sex, Ethnicity, Socio-economic status, Mother's tobacco smoking status, Father's tobacco smoking status, Mother's drinking status, Father's drinking status, Highest maternal education, Highest paternal education, Parental divorce, Antisocial peer activities, Grade point average across three years, Antisocial behaviour, Childhood conduct problems, Childhood attentional problems, Any tobacco use, Frequency of alcohol consumption (past 12 months), Other illicit drug use before age 17 years, Major depression, Family living standards, Parental history of criminal offending, Ever used tobacco, Ever used alcohol, Other illicit drug use, Symptoms of depression and anxiety, Parental tobacco smoking status, Parental history of alcohol problems, Parental drinking status, Parental illicit drug use, Parental history of problems with depression/anxiety/suicidal behaviour, Mother's education level at birth, Maximum parental education, Father's education level at birth, Number of parental separations, Parental divorce/separation by W6, Deviant peer affiliations, Peers ever used alcohol, Peers ever used tobacco, Peers ever used illicit drugs	9

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Smith, 2010 ¹⁴⁶	Cannabis	NR	Recreational	creatinine	9
Soderstorm, 2005 ¹⁴⁷	Cannabis	NR	Recreational	unadjusted	6
Solowij, 2011 ¹⁴⁸	Cannabis	NR	Recreational	premorbid intellectual functioning, alcohol use and tobacco use, and psychological symptoms of anxiety and depression	9
Sorbara, 2003 ¹⁴⁹	Cannabis	NR	Recreational	age, gender, diagnosis, poor medication adherence, duration of untreated psychosis,	9
Stirling, 2005 ¹⁵⁰	Cannabis	NR	Recreational	Age at onset	6
Strakowski, 2007 ¹⁵¹	Cannabis	NR	Recreational	Age, Female sex, White ethnicity, Education, Baseline YMRS score, Baseline HDRS score, Mixed state, Psychotic, Bipolar disorder onset, Cannabis use disorder, Days of cannabis use in the previous month, Cannabis use disorder onset, Cannabis use severity score in the previous month, AUDs, AUD grouped by onset, Days alcohol used to intoxication in previous month, Other drug use disorder	9
Swift, 2008 ¹⁵²	Cannabis	NR	Recreational	sex, parental divorce/separation and parental smoking	9
Tait, 2011 ¹⁵³	Cannabis	NR	Recreational	Cannabis group, age, gender, education	8
Terhune, 1982 ¹⁵⁴	Cannabis	NR	Recreational	Interview status	9
Terhune, 1992 ¹⁵⁵	Cannabis	NR	Recreational	Time of the dy, age	9
Tijssen, 2010 ¹⁵⁶	Cannabis	NR	Recreational	Age, sex, and socioeconomic status	9
Tzilos, 2005 ¹⁵⁷	Cannabis	NR	Recreational	age, ethnicity, and sex	8
Valmaggia, 2014 ¹⁵⁸	Cannabis	NR	Recreational	unadjusted	8
Van Der Meer, 2015 ¹⁵⁹	Cannabis	NR	Recreational	age, gender, use of other substances, alcohol use and baseline clinical outcome measures	9
Van Dijk, 2012 ¹⁶⁰	Cannabis	NR	Recreational	age, age of onset, baseline alcohol use, stimulant use, and SES at baseline	9
van Gelder, 2010 ¹⁶¹	Cannabis	NR	Recreational	maternal race/ethnicity, education, cigarette smoking, binge drinking, maternal age, prepregnancy BMI, and gestational weight gain	8
Van Laar, 2007 ¹⁶²	Cannabis	NR	Recreational	age, gender, education, urbanicity, employment and partner status; neuroticism, parental psychiatric history, childhood trauma, life-time alcohol use disorders, other substance use disorders, lifetime anxiety disorders, life-time mood disorders, and life-time psychotic symptoms	9
Van Os, 2002 ¹⁶³	Cannabis	NR	Recreational	Age, ex, ethnic Group, level of education, unemployment, and single marital status, urbanicity, experience with discrimination	8
van Ours, 2013 ¹⁶⁴	Cannabis	NR	Recreational	sexual abuse, physical abuse, parents' use of illicit drugs, abuse of alcohol, and criminality, parental alcohol abuse or dependence, parental offending history, mother's education; father's education, decile of the distribution of family income averaged over ages 0–10 years, family socio-economic status	9
Wade, 2005 ¹⁶⁵	Cannabis	NR	Recreational	Age, male, two parents, income, rural area, race, family attachment, school attachment, peer attachment	9
Wilcox, 2004 ¹⁶⁶	Cannabis	NR	Recreational	age, sex, race-ethnicity, free lunch status, early drug use, depression	9
Zammit, 2002 ¹⁶⁷	Cannabis	NR	Recreational	Psychiatric diagnosis at conscription, IQ score, personality variables, alcohol misuse, family history of psychiatric illness, financial situation of the family,	9

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
				and father's occupation	
Zammit, 2011 ¹⁶⁸	Cannabis	NR	Recreational	gender, parental social class, parental welfare benefit, parental marital status, housing, urban/rural index at birth, childhood measures of victimisation, depression, emotional and behavioural problems, tobacco, alcohol and other drug use, family history of depression, schizophrenia or any mental health illness in biological parents or grandparents	9
Woodward, 2014 ¹⁶⁹	Dronabinol	Oral	Medical	Unadjusted	NA/9
Walther, 2011 ¹⁷⁰	Dronabinol 2,5 mg	Oral capsule	Medical	NR	NA
Paton, 1977 ¹⁷¹	Marihuana	NR	Recreational	unadjusted	7
Bada, 2005 ¹⁷²	Marijuana	NR	Recreational	Maternal medical and obstetric complications, any hospitalization during pregnancy, maternal weight gain during pregnancy, PNC, maternal age, Medicaid insurance, and infant's gender, and race	8
Bailey, 2020 ¹⁷³	Marijuana	NR	Recreational	delivery year (± 1), delivery hospital (exact), maternal age (± 1 year), maternal marital status (married, single), race (white, minority), parity (0, 1, 2+), medical insurance (public, private), pregnancy smoking (yes, no), alcohol use (yes, no), benzodiazepine use (yes, no), opioid use (yes, no)	9
Berenson, 1996 ¹⁷⁴	Marijuana	NR	Recreational	maternal race, daily cigarette consumption, and use of alcohol while pregnant	9
Borowski, 2001 ¹⁷⁵	Marijuana	NR	Recreational	age, family structure, and welfare status	6
Brook, 1998 ¹⁷⁶	Marijuana	Inhaled	Recreational	Age, gender	7
Brook, 2002 ¹⁷⁷	Marijuana	NR	Recreational	Age, sex, parental educational level, family income, prior episodes of psychiatric disorders	9
Brook, 2011 ¹⁷⁸	Marijuana	NR	Recreational	sex, ethnicity, the two differing TI schools	7
Conner, 2015 ¹⁷⁹	Marijuana	NR	Recreational	smoking, other drug use, and African American race	8
Culver, 1974 ¹⁸⁰	Marijuana	NR	Recreational	Alcohol use	6
Epstein, 2013 ¹⁸¹	Marijuana	NR	Recreational	Age, race	8
Foshee, 2010 ¹⁸²	Marijuana	NR	Recreational	Family structure, parent education, and number of friends, sex, race, Individual context, Family context, Peer context, School context, Interaction terms	8
Fried, 1984 ¹⁸³	Marijuana	Inhaled	Recreational	mother's prepregnancy weight, maternal age, weight before pregnancy, sex of child, and nicotine use	9
Fried, 2005 ¹⁸⁴	Marijuana	NR	Recreational	pre-drug performance, family income, parental education, maternal use of alcohol, cigarettes, and marihuana during pregnancy, age and sex of subject, young adult's cigarette and alcohol use, positive criteria for generalized anxiety, major depression, dysthymic disorder, attention deficit/hyperactivity disorder, conduct disorder, oppositional defiant disorder, alcohol dependence and abuse	8
Greenland, 1982 ¹⁰²	Marijuana	Inhaled	Recreational	Race, income, smoking, alcohol use, first physician visit	7
Hanson, 2010 ¹⁸⁵	Marijuana	NR	Recreational	Age, ses	8
Hendershot, 2010 ¹⁸⁶	Marijuana	NR	Recreational	alcohol,	6
Hoffman, 2019 ¹⁸⁷	Marijuana	Inhaled	Recreational	gestational age at birth	9

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Jackson, 2016 ¹⁸⁸	Marijuana	NR	Recreational	Age, sex, race, zygoty, and socioeconomic status, other drug and alcohol use	8
Jamieson, 2010 ¹⁸⁹	Marijuana	NR	Recreational	substance use, demographic, socio-economic, perinatal, dental service utilization and oral health-related behaviour groups	7
Juon, 1997 ¹⁹⁰	Marijuana	NR	Recreational	gender	7
Kandel, 1986 ¹⁹¹	Marijuana	Inhaled	Recreational	Race, father's education, grade average, minor delinquency, educational aspiration, closeness to father, closeness to mother, peer orientation, peer activity, Father's hard liquor use, Mother's hard liquor use, Father's psychoactive use, Mother's psychoactive use, Depression score, Separated from parent(s) before age 11 yr, Family history of psychiatric problems, Ever used cigarettes, Ever used alcohol Ever used other illicit drugs, High-school dropout, Highest yr of school completed, No. of periods of employment, No. of periods of unemployment,	9
Kerlin, 2018 ¹⁹²	Marijuana	NR	Medical and Recreational	Unadjusted	7
Kim, 2017 ¹⁹³	Marijuana	NR	Recreational	age, gender, ethnicity	8
Mark, 2015 ¹⁹⁴	Marijuana	NR	Recreational	age, race, education, cigarette smoking, alcohol, abuse, married	9
McGee, 2005 ¹⁹⁵	Marijuana	NR	Recreational	Gender, experiencing depressed mood, high stress, and low parental attachment	8
McNaughton Reyes, 2014 ¹⁹⁶	Marijuana	NR	Recreational	other substances, emotional distress, family conflict, peer aggression, and dating abuse victimization	8
Melander, 2010 ¹⁹⁷	Marijuana	NR	Recreational	Adjusted, NR	6
Metz, 2017 ¹⁹⁸	Marijuana	NR	Recreational	race, obstetrical history, BMI, tobacco	9
Phatak, 2017 ¹⁹⁹	Marijuana	NR	Recreational	unadjusted	6
Pogge, 2005 ²⁰⁰	Marijuana	NR	Recreational	unadjusted	8
Price, 2015 ²⁰¹	Marijuana	NR	Recreational	IQ	8
Quinlivan, 2002 ²⁰²	Marijuana	NR	Recreational	Maternal height, prepregnancy weight, age and race, newborn gestational age and gender, smoking and alcohol use	8
Ravikoff Allegretti, 2013 ²⁰³	Marijuana	NR	Recreational	Adjusted, NR	7
Rodriguez, 2019 ²⁰⁴	Marijuana	NR	Recreational	Race/ethnicity, tobacco, age, other illicit substance use, and history of a psychiatric disorder	9
Romano, 2014 ²⁰⁵	Marijuana	NR	Recreational	unadjusted	9
Shiono, 1995 ²⁰⁶	Marijuana	NR	Recreational	cigarette smoking, alcohol drinking, and vaginal infections.	9
Shorey, 2014 ²⁰⁷	Marijuana	NR	Recreational	unadjusted	8
Shorey, 2014b ²⁰⁸	Marijuana	NR	Recreational	alcohol use, negative affect	9
Shorey, 2015 ²⁰⁹	Marijuana	NR	Recreational	Adjusted, NR	8
Stein, 2020 ²¹⁰	Marijuana	NR	Recreational	maternal age, race/ethnicity, education, marital status, health insurance during pregnancy, parity, tobacco use during pregnancy, adequacy of prenatal care, psychiatric diagnoses, chronic conditions, pregnancy-related	8

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
				conditions, and mode of delivery	
Straub, 2021 ²¹¹	Marijuana	NR	Recreational	age,15 race/ethnicity, parity, body mass index (BMI) at delivery, diagnosis of type 2 diabetes,19 health insurance type (subsidized/Medicaid or other), use of Women, Infant and Children (WIC) program, self-reported tobacco use and alcohol use	9
Tashkin, 2012 ²¹²	Marijuana	Inhaled	Recreational	age and gender	8
Temple, 2013 ²¹³	Marijuana	NR	Recreational	unadjusted	9
Tien, 1990 ²¹⁴	Marijuana	NR	Recreational	unadjusted	7
Visscher, 2003 ²¹⁵	Marijuana	NR	Recreational	age, race, marital status, income, number of prenatal visits, parity, twin status, infant gestational age, mother's weight before pregnancy and weight gain during pregnancy, parity, substance use during pregnancy, diabetes, and hypertension	8
Weiland, 2015 ²¹⁶	Marijuana	NR	Recreational	unadjusted	8
Wilkinson, 2015 ²¹⁷	Marijuana	NR	Recreational	marital status; age; race; history of incarceration; waiting list status; psychosis; chronic medical problems; war zone service; length of stay; expulsion from treatment; and baseline measures of violence, PTSD, drug and alcohol abuse, and employment	9
Witter, 1990 ²¹⁸	Marijuana	NR	Recreational	Unadjusted	6
Zhang, 2014 ²¹⁹	Marijuana	NR	Recreational	latent time-invariant effects and lagged effects of dependent variables	7
Zuckerman, 1989 ²²⁰	Marijuana	NR	Recreational	Maternal age, gestational age, cigarettes, alcohol,	7
Barlow, 2019 ²²¹	Medical Cannabis	NR	Medical	unadjusted	6
O'Connel, 2019 ²²²	Medical Cannabis	NR	Medical	unadjusted	7
Vigil, 2017 ²²³	Medical Cannabis	NR	Medical	Age, gender	9
Yassin, 2019 ²²⁴	Medical Cannabis	NR	Medical	unadjusted	7
Pawasarat, 2020 ²²⁵	Medical Marijuana	NR	Medical	unadjusted	7
Maida, 2008 ²²⁶	Nabilone 0,5 mg Nabilone 1 mg up to 2 mg/d	Oral	Medical	Baseline symptom record, propensity score	7
Cameron, 2014 ²²⁷	Nabilone 1,4 mg to 4 mg	Oral capsule / powder	Medical	NR	6
Capano, 2020 ²²⁸	Soft gel 15.7 mg CBD, 0.5 mg THC, 0.3 mg cannabidivarin (CBDV), 0.9 mg cannabidiolic acid (CBDA), 0.8 mg cannabichrome (CBC), and >1% botanical terpene blend	NR	Medical	unadjusted	4
Cross-sectional studies					
Adejumo, 2017 ²²⁹	Cannabis	NR	Recreational	age, gender, race, socioeconomic status, insurance type, hypertension, DM, dyslipidemia, metabolic syndrome, obesity, tobacco	NA
Asbridge, 2005 ²³⁰	Cannabis	NR	Recreational	Demographic characteristics, driver experience, and substance use	NA
Ashtari, 2011 ²³¹	Cannabis	NR	Recreational	unadjusted	NA
Bahorik, 2013 ²³²	Cannabis	NR	Recreational	Multiple inference testing	NA
Bersani, 2002 ²³³	Cannabis	NR	Recreational	unadjusted	NA
Borschmann, 2014 ²³⁴	Cannabis	NR	Recreational	Sex, age	NA

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Chruchwell, 2010 ²³⁵	Cannabis	NR	Recreational	unadjusted	NA
Chye, 2017a ²³⁶	Cannabis	NR	Recreational	unadjusted	NA
Chye, 2017b ²³⁷	Cannabis	NR	Recreational	unadjusted	NA
Cuttler, 2012 ²³⁸	Cannabis	NR	Recreational	unadjusted	NA
Dharmawardene, 2017 ²³⁹	Cannabis	NR	Recreational	Gender, age, ethnicity, diagnosis, cudit-r, audit	NA
Estrada, 2011 ²⁴⁰	Cannabis	NR	Recreational	unadjusted	NA
Fonseca-Pedrero, 2020 ²⁴¹	Cannabis	NA	Recreational	gender, age, socio-economic level, smoking, alcohol use, emotional and behavioral problems, and IQ	NA
Gilman, 2014 ²⁴²	Cannabis	NR	Recreational	age, sex, alcohol use, and cigarette smoking	NA
Gonzalez, 2012 ²⁴³	Cannabis	NR	Recreational	12-month alcohol and nicotine use	NA
Grant, 1973 ²⁴⁴	Cannabis	NR	Recreational	unadjusted	NA
Guvendeger Doksat, 2017 ²⁴⁵	Cannabis	NR	Recreational	Unadjusted	NA
Harley, 2010 ²⁴⁶	Cannabis	NR	Recreational	gender, age, socio-economic status and family psychiatric history	NA
Honarmand, 2011 ²⁴⁷	Cannabis	NR	Recreational	Age, sex, education, EDSS, alcohol consumption, depression, anxiety, and fatigue	NA
Hooper, 2014 ²⁴⁸	Cannabis	NR	Recreational	sociodemographic variables, ADHD combined type and conduct disorder	NA
Houston, 2011 ²⁴⁹	Cannabis	NR	Recreational	Education, Ethnicity, Employment, Depression, Alcohol, Cumulative sexual exposure	NA
Jager, 2007 ²⁵⁰	Cannabis	NR	Recreational	Alcohol use,cigarettes	NA
Jager, 2010 ²⁵¹	Cannabis	NR	Recreational	Age, country	NA
Jonsdottir, 2013 ²⁵²	Cannabis	NR	Recreational	unadjusted	NA
Kiang, 2012 ²⁵³	Cannabis	NR	Recreational	unadjusted	NA
Lamers, 2006 ²⁵⁴	Cannabis	NR	Recreational	Lifetime alcohol use, Lifetime THC use, THC abstinence	NA
Lev-Ran, 2012 ²⁵⁵	Cannabis	NR	Recreational	unadjusted	NA
Loberg, 2012 ²⁵⁶	Cannabis	NR	Recreational	unadjusted	NA
Mann, 2007 ²⁵⁷	Cannabis	NR	Recreational	age, gender, region, income, education, and marital status	NA
McHale, 2008 ²⁵⁸	Cannabis	NR	Recreational	unadjusted	NA
Messinis, 2006 ²⁵⁹	Cannabis	NR	Recreational	(age, education level, estimated premorbid IQ, sex, severity of depression	NA
Morgan, 2010 ²⁶⁰	Cannabis	NR	Recreational	unadjusted	NA
Morgan, 2012 ²⁶¹	Cannabis	NR	Recreational	unadjusted	NA
Negrete, 1986 ²⁶²	Cannabis	NR	Recreational	unadjusted	NA
Nestor, 2008 ²⁶³	Cannabis	NR	Recreational	education, verbal IQ, and mood	NA
Nunez, 2016 ²⁶⁴	Cannabis	NR	Recreational	Sociodemographic, clinical variables, sex, years of cannabis use, amount of current tobacco consumption, amount of current alcohol consumption, medication	NA
Paruk, 2016 ²⁶⁵	Cannabis	NR	Recreational	unadjusted	NA
Pope, 2003 ²⁶⁶	Cannabis	NR	Recreational	age, sex, ethnicity, mother's and father's educational attainment, parental household income, and presence of substance abuse or psychiatric disorders in a first-degree relative, VIQ, ADHD, childhood antisocial behavior	NA
Pujol, 2014 ²⁶⁷	Cannabis	NR	Recreational	Years of education	NA

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Quednow, 2005 ²⁶⁸	Cannabis	NR	Recreational	Verbal IQ	NA
Rabin, 2013 ²⁶⁹	Cannabis	NR	Recreational	Age, CPD (cigarettes smoked per day)	NA
Ray, 1978 ²⁷⁰	Cannabis	NR	Recreational	Unadjusted	NA
Ringen, 2010 ²⁷¹	Cannabis	NR	Recreational	diagnosis, age, gender, years of education, pre-morbid academic functioning and daily tobacco use	NA
Rodgers, 2000 ²⁷²	Cannabis	NR	Recreational	unadjusted	NA
Rossow, 2009 ²⁷³	Cannabis	NR	Recreational	Gender, age, impulsivity, problems score, frequently intoxicated, other illicit drugs, depression, anxiety	NA
Salyers, 2001 ²⁷⁴	Cannabis	NR	Recreational	adjusted, NR	NA
Schweinsburg, 2011 ²⁷⁵	Cannabis	NR	Recreational	life-time use of other drugs	NA
Scnhell, 2009 ²⁷⁶	Cannabis	NR	Recreational	psychopathological symptoms, education and nicotine use	NA
Scott, 2009 ²⁷⁷	Cannabis	NR	Recreational	Age, gender, Child Behavior Checklist score	NA
Shariff, 2017 ²⁷⁸	Cannabis	NR	Recreational	age, sex, race/ethnicity, family income, systemic conditions (diabetes), substance use (alcohol and smoking) and periodontal treatment	NA
Smith, 2014 ²⁷⁹	Cannabis	NR	Recreational	Total brain volume, nicotine use, SGAs dose-year, duration of illness	NA
Solowij, 2002 ²⁸⁰	Cannabis	NR	Recreational	FSIQ, age, duration of cannabis use, recency of cannabis use	NA
Soueif, 1976 ²⁸¹	Cannabis	NR	Recreational	unadjusted	NA
Takagi, 2011 ²⁸²	Cannabis	NR	Recreational	Verbal IQ	NA
Tamm, 2013 ²⁸³	Cannabis	NR	Recreational	age, gender, IQ, socioeconomic status, and frequency of alcohol use and tobacco use in the past year	NA
Taurah, 2013 ²⁸⁴	Cannabis	NR	Recreational	Age, alcohol, amphetamine, cannabis, cocaine, heroin, and ketamin	NA
Thames, 2014 ²⁸⁵	Cannabis	NR	Recreational	age, premorbid IQ, and frequency and amount of current alcohol use	NA
Varma, 1988 ²⁸⁶	Cannabis	NR	Recreational	unadjusted	NA
Verdejo-Garcia, 2013 ²⁸⁷	Cannabis	NR	Recreational	sex, age, smoking status, and IQ	NA
Wadsworth, 2005 ²⁸⁸	Cannabis	NR	Recreational	IQ, age, sleep length, alcohol consumption, anxiety, depression and neuroticism	NA
Wiles, 2006 ²⁸⁹	Cannabis	NR	Recreational	psychotropic drugs and therapy	NA
Williams, 1985 ²⁹⁰	Cannabis	NR	Recreational	unadjusted	NA
Yucel, 2008 ²⁹¹	Cannabis	NR	Recreational	unadjusted	NA
Shannon, 2019 ²⁹²	CBD 25 mg/day	Oral capsule	Medical	unadjusted	NA
Bailey, 1998 ²⁹³	Marijuana	NR	Recreational	Lifetime number of partners, frequency of having sex while high, survival sex, age when had first sexual intercourse, and number of dependency symptoms, how well partner was known to respondent, whether respondent talked to partner about the risk of AIDS, and whether respondent planned to have sex, degree of worry about getting AIDS, motivation to use condoms in response to knowledge about AIDS, gender, race, public assistance, school attendance, age when first homeless	NA
Bailey, 2006 ²⁹⁴	Marijuana	NR	Recreational	Background characteristics, Miscarriages, Modifiable pregnancy health behaviors, Prenatal care utilization, Weight gain, Smoking, Alcohol, Hard	NA

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
				illicit drugs	
Chang, 2006a ²⁹⁵	Marijuana	NR	Recreational	age	NA
De Boni, 2011 ²⁹⁶	Marijuana	NR	Recreational	age, gender, type of vehicle (motorcycle, car, or other) or role in the accident, alcohol	NA
Eaton, 2007 ²⁹⁷	Marijuana	NR	Recreational	race or ethnicity, age, and grades earned in school	NA
Giletta, 2012 ²⁹⁸	Marijuana	NR	Recreational	gender, age, ethnicity, parent educational level	NA
Greenland, 1983 ²⁹⁹	Marijuana	NR	Recreational	age	NA
Kingree, 2000 ³⁰⁰	Marijuana	NR	Recreational	Participant's demographic characteristics, AIDS knowledge, attitudes toward condoms, future orientation	NA
Kingree, 2002 ³⁰¹	Marijuana	NR	Recreational	gender, race, self-restraint, emotional distress, age at event, alcohol use	NA
Kingree, 2003 ³⁰²	Marijuana	NR	Recreational	demographic characteristics, AIDS knowledge, attitudes toward condoms, and future orientation	NA
Leigh, 2008 ³⁰³	Marijuana	NR	Recreational	age, drinking before sex, and drug use before sex	NA
Levy, 2019 ³⁰⁴	Marijuana	NR	Recreational	age (continuous), sex, and race/ethnicity	NA
Linn, 1983 ³⁰⁵	Marijuana	Inhaled	Recreational	age, race, education, welfare status, cigarette smoking at delivery, alcohol consumption during the first trimester of pregnancy, parity, previous stillbirths, induced abortions, miscarriages, and ponderal index	NA
Mahmood, 2010 ³⁰⁶	Marijuana	NR	Recreational	lifetime occasions of other drug, tobacco use	NA
Mass, 2001 ³⁰⁷	Marijuana	NR	Recreational	age and urinalysis result	NA
McMahon, 2006 ³⁰⁸	Marijuana	NR	Recreational	unadjusted	NA
Medina, 2007 ³⁰⁹	Marijuana	NR	Recreational	unadjusted	NA
Medina, 2007a ³¹⁰	Marijuana	NR	Recreational	total intracranial volume	NA
Medina, 2007b ³¹¹	Marijuana	NR	Recreational	individual variability in brain size	NA
Mir, 2012 ³¹²	Marijuana	Inhaled	Recreational	unadjusted	NA
Muula, 2013 ³¹³	Marijuana	NR	Recreational	Age, sex	NA
Nabors, 2009 ³¹⁴	Marijuana	NR	Recreational	Adjusted, NR	NA
Ortiz, 2018 ³¹⁵	Marijuana	NR	Recreational	sex, age, healthcare coverage, oral sex partners and periodontitis	NA
Petronis, 1990 ³¹⁶	Marijuana	NR	Recreational	unadjusted	NA
Sanders, 2010 ³¹⁷	Marijuana	NR	Recreational	partner status, age, and ethnicity	NA
Taliaferro, 2019 ³¹⁸	Marijuana	NR	Recreational	unadjusted	NA
Terry-McElrath, 2014 ³¹⁹	Marijuana	NR	Recreational	simultaneous alcohol and marijuana use status, average miles driven per week, gender, race/ ethnicity, number of parents in the home, average parental education, college plans, grade point average, evenings out during the week for recreation, truancy, population density, region, and year	NA
Tucker, 2010 ³²⁰	Marijuana	NR	Recreational	race/ethnicity, age, education, pregnancy status, Drug Abuse Screening Test score, and Alcohol Use Disorders Identification Test score	NA
Tucker, 2012 ³²¹	Marijuana	NR	Recreational	gender, race/ethnicity, age, and education	NA
Tucker, 2013 ³²²	Marijuana	NR	Recreational	age, race/ethnicity, and years of education attitudes about condoms, HIV knowledge, and gender-related beliefs	NA
Walton, 2009 ³²³	Marijuana	Inhaled	Recreational	demographics, weapon carriage, binge drinking, cigarette smoking, and	NA

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
				marijuana use	
Yan, 2010 ³²⁴	Marijuana	Inhaled	Recreational	Violence engagement, Physical fighting, Gang membership or Involvement, Substance use past year Alcohol use, Binge drinking, Other drug use, Emotional well-being, Self-worth, Social competency, Prosocial behaviors, Parental/familial factors	NA
Plevinsky, 2019 ³²⁵	Marijuana	NR	Recreational	Unadjusted	NA
Randomized controlled trials					
Almog, 2020 ³²⁶	Bedrocan CBD	Inhaled	Medical	NA	High
Abrams, 2003 ³²⁷	Cannabis Δ^9 -THC	Inhaled Oral capsule	Medical	NA	High
Abrams, 2007 ³²⁸	Cannabis	Inhaled	Medical	NA	Unclear
Carroll, 2004 ³²⁹	Cannabis	Oral capsule (Cannador)	Medical	NA	Unclear
Chang, 1979 ³³⁰	Cannabis	Inhaled	Medical	NA	Unclear
Chang, 1981 ³³¹	Cannabis	Inhaled	Medical	NA	High
Cooper, 2016 ³³²	Cannabis Inactive Cannabis	Inhaled	Medical	NA	Low
Corey-Bloom, 2012 ³³³	Cannabis	Inhaled	Medical	NA	High
Ellis, 2008 ³³⁴	Cannabis	inhaled	Medical	NA	Unclear
Greenwald, 2000 ³³⁵	Cannabis	Inhaled	Medical	NA	Low
Harotounian, 2016 ³³⁶	Cannabis	Inhaled Oral	Medical	NA	NA
Isaac, 2005 ³³⁷	Cannabis	NR	Recreational	NA	High
Kraft, 2008 ³³⁸	Cannabis	Oral capsule	Medical	NA	Low
Naftali, 2013 ³³⁹	Cannabis	Inhaled	Medical	NA	High
Shelef, 2016 ³⁴⁰	Cannabis	Oral	Medical	NA	NA
Strasser, 2006 ³⁴¹	Cannabis Δ^9 -THC	Oral gelatine capsule	Medical	NA	High
Vaney, 2004 ³⁴²	Cannabis	Oral capsule	Medical	NA	High
Wade, 2003 ³⁴³	Cannabis	Sublingual spray	Medical	NA	Unclear
Wallace, 2015 ³⁴⁴	Cannabis	Inhaled	Medical	NA	Unclear
Ware, 2010 ³⁴⁵	Cannabis	Inhaled (single smoked)	Medical	NA	Unclear
Wilsey, 2008 ³⁴⁶	Cannabis	Inhaled	Medical	NA	Unclear
Wilsey, 2013 ³⁴⁷	Cannabis	Inhaled	Medical	NA	Low

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Zajicek, 2003 ³⁴⁸	Cannabis	Oral capsule	Medical	NA	Unclear
Zajicek, 2012 ³⁴⁹	Cannabis	Oral gelatine capsule	Medical	NA	Low
Bergamaschi, 2011 ³⁵⁰	CBD	Oral gelatine capsule	Medical	NA	Unclear
Boggs, 2018 ³⁵¹	CBD	Oral	Medical	NA	High
Crippa, 2011 ³⁵²	CBD	Oral gelatine capsule	Medical	NA	Unclear
Devinsky, 2017 ³⁵³	CBD	Oral solution	Medical	NA	Low
Devinsky, 2018 ³⁵⁴	CBD	Oral solution	Medical	NA	Moderate
GWP clobazam, 2018 ³⁵⁵	CBD	Oral solution	Medical	NA	Low
GWP fatty liver, 2014 ³⁵⁶	CBD	Oral hard gelatine capsule	Medical	NA	Low
Hunter, 2018 ³⁵⁷	CBD	Transdermic	Medical	NA	Low
Irving, 2018 ³⁵⁸	CBD	Oral hard gelatine capsule	Medical	NA	High
Jadoon, 2016 ³⁵⁹	CBD THCV CBD +THCV	Oral	Medical	NA	Low
McGuire, 2018 ³⁶⁰	CBD	Oral solution	Medical	NA	Unclear
Miller, 2020 ³⁶¹	CBD	Oral solution	Medical	NA	Low
Naftali, 2017 ³⁶²	CBD	Oral	Medical	NA	High
Salim, 2005 ³⁶³	CBD	Oral capsule	Medical	NA	Low
Taylor, 2018 ³⁶⁴	CBD	Oral solution	Medical	NA	Low
Thiele, 2018 ³⁶⁵	CBD	Oral solution	Medical	NA	Moderate
Thiele, 2020 ³⁶⁶	CBD	Oral solution 100 mg/ml	Medical	NA	Low
Xu, 2019 ³⁶⁷	CBD	Oral oil	Medical	NA	Low
Karst, 2003 ³⁶⁸	CT-3 (1',1'dimethylheptyl-Delta8-tetrahydrocannabinol-11-oic acid) 10 mg cps	Oral capsule	Medical	NA	High
Rukwied, 2003 ³⁶⁹	HU210	Skin patch	Medical	NA	Low
Hutcheon, 1983 ³⁷⁰	Levonantradol 0,5 / 0,75 / 1 mg	Intramuscular ampoules	Medical	NA	High
Heim, 1984 ³⁷¹	Levonantradol 0,5 mg	Intramuscular	Medical	NA	High
Sheidler, 1984 ³⁷²	Levonantradol 1 mg i.m.	Intramuscular	Medical	NA	Low
Jain, 1981 ³⁷³	Levonantradol 1,5 mg Levonantradol 2 mg Levonantradol 2,5 mg Levonantradol 3 mg	Intramuscular	Medical	NA	Unclear
Cobellis, 2011 ³⁷⁴	micronized N-Palmitoylethanolamine-transpolydatin (400 mg + 40 mg	Oral	Medical	NA	Low

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
	twice a day				
Ahmedzai, 1983 ³⁷⁵	Nabilone	Oral capsule	Medical	NA	Unclear
Beaulieu, 2006 ³⁷⁶	Nabilone	Oral capsule	Medical	NA	High
Chan, 1987 ³⁷⁷	Nabilone	Oral capsule	Medical	NA	High
Crawford, 1986 ³⁷⁸	Nabilone	Oral capsule	Medical	NA	High
Dalzell, 1986 ³⁷⁹	Nabilone	Oral capsule	Medical	NA	Moderate
Einhorn, 1981 ³⁸⁰	Nabilone	Oral capsule	Medical	NA	Unclear
Fabre, 1981 ³⁸¹	Nabilone	Oral capsule	Medical	NA	High
Frank, 2008 ³⁸²	Nabilone	Oral capsule	Medical	NA	Unclear
Fraser, 2009 ³⁸³	Nabilone	Oral capsule	Medical	NA	High
George, 1983 ³⁸⁴	Nabilone	Oral capsule	Medical	NA	High
Glass, 1981 ³⁸⁵	Nabilone	Oral capsule	Medical	NA	High
Herman, 1979 ³⁸⁶	Nabilone	Oral capsules	Medical	NA	Unclear
Hermann, 2019 ³⁸⁷	Nabilone	Oral	Medical	NA	Unclear
Jetly, 2015 ³⁸⁸	Nabilone	Oral tablet	Medical	NA	Unclear
Johansson, 1982 ³⁸⁹	Nabilone	Oral	Medical	NA	High
Jones, 1982 ³⁹⁰	Nabilone	Oral	Medical	NA	High
Kalliomaki, 2012 ³⁹¹	Nabilone	Oral capsule	Medical	NA	High
Levitt, 1982 ³⁹²	Nabilone	Oral	Medical	NA	High
Niederle, 1986 ³⁹³	Nabilone	Oral	Medical	NA	Unclear
Niiranen, 1985 ³⁹⁴	Nabilone	Oral	Medical	NA	High
Niiranen, 1987 ³⁹⁵	Nabilone	Oral	Medical	NA	High
Pini, 2012 ³⁹⁶	Nabilone	Oral capsule	Medical	NA	High
Pinsger, 2006 ³⁹⁷	Nabilone	Oral capsule	Medical	NA	Low
Pomeroy, 1986 ³⁹⁸	Nabilone	Oral capsule	Medical	NA	High
Pooyania, 2010 ³⁹⁹	Nabilone	Oral tablet	Medical	NA	Unclear
Redmond, 2008 ⁴⁰⁰	Nabilone	Oral	Medical	NA	High
Skrabek, 2008 ⁴⁰¹	Nabilone	Oral	Medical	NA	Unclear
Steele, 1980 ⁴⁰²	Nabilone	Oral capsule	Medical	NA	High
Toth, 2012 ⁴⁰³	Nabilone	Oral capsule	Medical	NA	Low
Turcotte, 2015 ⁴⁰⁴	Nabilone	Oral capsule	Medical	NA	Low
Wada, 1982 ⁴⁰⁵	Nabilone	Oral capsules	Medical	NA	Unclear
Wissel, 2006 ⁴⁰⁶	Nabilone	Oral capsule	Medical	NA	High
Blake, 2006 ⁴⁰⁷	Nabiximols	Oromucosal spray	Medical	NA	Unclear

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Collin, 2007 ⁴⁰⁸	Nabiximols	Oromucosal spray	Medical	NA	Unclear
Collin, 2010 ⁴⁰⁹	Nabiximols	Oromucosal spray	Medical	NA	Unclear
Conte, 2009 ⁴¹⁰	Nabiximols	Oromucosal spray	Medical	NA	High
Duran, 2010 ⁴¹¹	Nabiximols	Oromucosal spray	Medical	NA	High
Fallon, 2017 ⁴¹²	Nabiximols	Oromucosal spray	Medical	NA	Unclear
Lichtman, 2018 ⁴¹³	Nabiximols	Oromucosal spray	Medical	NA	High
Lynch, 2014 ⁴¹⁴	Nabiximols	Oromucosal spray	Medical	NA	Unclear
Moreno, 2016 ⁴¹⁵	Nabiximols	Oromucosal spray	Medical	NA	High
Novotna, 2011 ⁴¹⁶	Nabiximols	Oromucosal spray	Medical	NA	High
Nurmikko, 2007 ⁴¹⁷	Nabiximols	Oromucosal spray	Medical	NA	High
Portenoy, 2012 ⁴¹⁸	Nabiximols	Oromucosal spray	Medical	NA	Unclear
Serpell, 2012 ⁴¹⁹	Nabiximols	Oromucosal spray	Medical	NA	Unclear
Serpell, 2014 ⁴²⁰	Nabiximols	Oromucosal spray	Medical	NA	High
Aragona, 2008 ⁴²¹	Nabiximols	Oralmucosal sublingual spray	Medical	NA	High
Berman, 2004 ⁴²²	Nabiximols	Oromucosal spray	Medical	NA	High
Cooper, 2017 ⁴²³	Nabiximols	Oromucosal spray	Medical	NA	Unclear
Johnson, 2010 ⁴²⁴	Nabiximols	Oromucosal spray	Medical	NA	Unclear
Kavia, 2010 ⁴²⁵	Nabiximols	Oromucosal spray	Medical	NA	High
Leocani, 2015 ⁴²⁶	Nabiximols	Oromucosal spray	Medical	NA	Unclear
Markovà, 2019 ⁴²⁷	Nabiximols	Oromucosal spray	Medical	NA	Low
Rog, 2005 ⁴²⁸	Nabiximols	Oromucosal spray	Medical	NA	Low
Selvarajah, 2010 ⁴²⁹	Nabiximols	Oromucosal spray sublingually	Medical	NA	High
Tomassini, 2014 ⁴³⁰	Nabiximols	Oromucosal spray	Medical	NA	High
Vachovà, 2014 ⁴³¹	Nabiximols	Oromucosal spray	Medical	NA	Unclear
Wade, 2004 ⁴³²	Nabiximols	Oral spray	Medical	NA	High
Staquet, 1978 ⁴³³	Nitrogen-containing benzopyran derivative (NIB) 4 mg	Oral capsule	Medical	NA	High
Andresen, 2016 ⁴³⁴	PEA-um 600 mg	Oral microgranules	Medical	NA	Low

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Huggins, 2012 ⁴³⁵	PF-04457845 (potent and selective fatty acid amide hydrolase-1 (FAAH1) inhibitor)	Oral	Medical	NA	High
Liem-Moolenaar, 2010 ⁴³⁶	THC	Inhaled	Medical	NA	Low
Wallace, 2007 ⁴³⁷	THC	Inhaled	Medical	NA	Low
Germini, 2017 ⁴³⁸	um-PEA 600 mg	Oral	Medical	NA	Low
Karniol, 1973 ⁴³⁹	Δ^9 -THC and Δ^9 -THC	Inhaled	Medical	NA	High
Ahmed, 2014 ⁴⁴⁰	Δ^9 -THC	Oral tablet	Medical	NA	low
Ball, 2015 ⁴⁴¹	Δ^9 -THC	Oral gelatin capsule	Medical	NA	High
Barkus, 2010 ⁴⁴²	Δ^9 -THC	Intravenous	Medical	NA	Low
Beal, 1995 ⁴⁴³	Δ^9 -THC	Oral capsule	Medical	NA	High
Beaumont, 2009 ⁴⁴⁴	Δ^9 -THC	Oral	Medical	NA	High
Bhattacharyya, 2009 ⁴⁴⁵	Δ^9 -THC CBD	Oral capsule	Medical	NA	Moderate
Bhattacharyya, 2015 ⁴⁴⁶	Δ^9 -THC	Oral capsule	Medical	NA	Low
Bossong, 2008 ⁴⁴⁷	Δ^9 -THC	Inhaled	Medical	NA	Low
Brisbois, 2011 ⁴⁴⁸	Δ^9 -THC	Oral capsule	Medical	NA	High
Buggy, 2003 ⁴⁴⁹	Δ^9 -THC	Oral capsule	Medical	NA	High
Cooper, 2013 ⁴⁵⁰	Δ^9 -THC Cannabis	Oral capsule Inhaled	Medical	NA	Low
D'Souza, 2004 ⁴⁵¹	Δ^9 -THC	Intravenous	Medical	NA	Low
D'Souza, 2008 ⁴⁵²	Δ^9 -THC	Intravenous	Medical	NA	Low
D'Souza, 2009 ⁴⁵³	Δ^9 -THC	Intravenous	Medical	NA	Low
D'Souza, 2012 ⁴⁵⁴	Δ^9 -THC	Intravenous	Medical	NA	Low
de Vries, 2016 ⁴⁵⁵	Δ^9 -THC	Oral	Medical	NA	Unclear
de Vries, 2017 ⁴⁵⁶	Δ^9 -THC	Oral	Medical	NA	Unclear
Esfandyari, 2006 ⁴⁵⁷	Δ^9 -THC	Oral	Medical	NA	Unclear
Frytak, 1979 ⁴⁵⁸	Δ^9 -THC	Oral gelatin capsule	Medical	NA	High
Gralla, 1984 ⁴⁵⁹	Δ^9 -THC	Oral capsule	Medical	NA	Unclear
Haney, 2006 ⁴⁶⁰	Δ^9 -THC	Oral capsule	Medical	NA	High
Issa, 2014 ⁴⁶¹	Δ^9 -THC	Oral tablet	Medical	NA	Unclear
Karniol, 1975 ⁴⁶²	Δ^9 -THC CBN Δ^9 -THC+ CBN	Oral	Medical	NA	High
Killesein, 2002 ⁴⁶³	Δ^9 -THC Cannabis	Oral capsule	Medical	NA	H
Killestein, 2002 ⁴⁶⁴	Δ^9 -THC Cannabis	Oral capsule	Medical	NA	Unclear

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
Kleinloog, 2012 ⁴⁶⁵	Δ^9 -THC	Inhaled	Medical	NA	Low
Klooker, 2010 ⁴⁶⁶	Δ^9 -THC	Oral	Medical	NA	High
Lane, 1991 ⁴⁶⁷	Δ^9 -THC	Oral	Medical	NA	High
Langford, 2013 ⁴⁶⁸	Δ^9 -THC	Oromucosal spray	Medical	NA	High
Lee, 2013 ⁴⁶⁹	Δ^9 -THC	Oral	Medical	NA	Low
Levin, 2011 ⁴⁷⁰	Δ^9 -THC	Oral gelatine capsule	Medical	NA	High
Levin, 2016 ⁴⁷¹	Δ^9 -THC	Oral gelatine capsule	Medical	NA	High
Libman, 1985 ⁴⁷²	Δ^9 -THC	Oral capsule	Medical	NA	Low
Malik, 2016 ⁴⁷³	Δ^9 -THC	Oral capsule	Medical	NA	High
McCabe, 1988 ⁴⁷⁴	Δ^9 -THC	Oral capsule	Medical	NA	High
Morgan, 2018 ⁴⁷⁵	Δ^9 -THC CBD Δ^9 -THC + CBD	Inhaled	Medical	NA	Moderate
Muller-Vahl, 2001 ⁴⁷⁶	Δ^9 -THC	Oral gelatine capsule	Medical	NA	High
Muller-Vahl, 2003 ⁴⁷⁷	Δ^9 -THC	Oral gelatine capsule	Medical	NA	High
Naef, 2003 ⁴⁷⁸	Δ^9 -THC	Oral capsule	Medical	NA	Low
Narang, 2008 ⁴⁷⁹	Δ^9 -THC	Oral capsule	Medical	NA	Low
Neidhart, 1981 ⁴⁸⁰	Δ^9 -THC	Oral capsule	Medical	NA	High
Noyes, 1975a ⁴⁸¹	Δ^9 -THC	Oral capsule (sesame oil)	Medical	NA	Unclear
Noyes, 1975b ⁴⁸²	Δ^9 -THC	Oral capsule (sesame oil)	Medical	NA	Unclear
Orr, 1981 ⁴⁸³	Δ^9 -THC	Oral gelatine capsule (0,12 ml seasme oil)	Medical	NA	Unclear
Petro, 1981 ⁴⁸⁴	Δ^9 -THC	Oral capsule	Medical	NA	High
Radhakrishnan, 2015 ⁴⁸⁵	Δ^9 -THC	Intravenous	Medical	NA	Low
Rintala, 2010 ⁴⁸⁶	Δ^9 -THC	Oral	Medical	NA	High
Roberts, 2006 ⁴⁸⁷	Δ^9 -THC	Oral capsule	Medical	NA	Low
Roitman, 2014 ⁴⁸⁸	Δ^9 -THC	Oral oil	Medical	NA	High
Sallan, 1975 ⁴⁸⁹	Δ^9 -THC	Oral gelatine capsule (0,12 ml sesame oil suspension)	Medical	NA	High
Sallan, 1980 ⁴⁹⁰	Δ^9 -THC	Oral capsule (0,12 ml sesame oil suspension)	Medical	NA	Moderate
Schimirigk, 2017 ⁴⁹¹	Δ^9 -THC	Oral	Medical	NA	Unclear
Schlienz, 2018 ⁴⁹²	Δ^9 -THC	Oral capsule	Medical	NA	Unclear

Single Study	Type of cannabis	Route of administration	Type of use (recreational vs medical)	Variables adjustment / matching	RoB/ NOS
	Cannabis	Inhaled cannabis cigarettes			
Seeliing, 2006 ⁴⁹³	Δ^9 -THC	Oral gelatine capsule	Medical	NA	Low
Svendsen, 2004 ⁴⁹⁴	Δ^9 -THC	Oral capsule (sesame oil)	Medical	NA	Low
Thomas, 1982 ⁴⁹⁵	Δ^9 -THC	Oral	Medical	NA	Unclear
Timpone, 1997 ⁴⁹⁶	Δ^9 -THC	Oral	Medical	NA	High
Tomida, 2006 ⁴⁹⁷	Δ^9 -THC CBD	Sublingual (oromucosal spray)	Medical	NA	Unclear
Van Amerongen, 2017 ⁴⁹⁸	Δ^9 -THC	Oral	Medical	NA	Unclear
Van Amerongen, 2018 ⁴⁹⁹	Δ^9 -THC	Oral tablet	Medical	NA	Unclear
van den Elsen, 2015a ⁵⁰⁰	Δ^9 -THC	Oral	Medical	NA	Unclear
van den Elsen, 2015b ⁵⁰¹	Δ^9 -THC	Oral tablet	Medical	NA	High
Vandrey, 2013 ⁵⁰²	Δ^9 -THC Cannabis 5 puff	Oral capsule Inhaled	Medical	NA	Unclear
Volicer, 1997 ⁵⁰³	Δ^9 -THC	Oral capsule	Medical	NA	High
Walter, 2016 ⁵⁰⁴	Δ^9 -THC	Oral capsule	Medical	NA	Low
Walther, 2006 ⁵⁰⁵	Δ^9 -THC	Oral capsule	Medical	NA	NA
Wilsey, 2016 ⁵⁰⁶	Δ^9 -THC	Oral capsule	Medical	NA	Unclear
Wong, 2012 ⁵⁰⁷	Δ^9 -THC	Oral	Medical	NA	High
Zadikoff, 2011 ⁵⁰⁸	Δ^9 -THC	Oral tablet	Medical	NA	Low
Zajicek, 2005 ⁵⁰⁹	Δ^9 -THC Cannabis	Oral Capsule	Medical	NA	Low
Zimmer, 1976 ⁵¹⁰	Δ^9 -THC	Oral olive oil	Medical	NA	High
Zuardi, 1982 ⁵¹¹	Δ^9 -THC CBD Δ^9 -THC+ CBD	Oral capsule	Medical	NA	High
Freeman, 2006 ⁵¹²	Δ^9 -THC + CBD	Oral	Medical	NA	High

Legend. Δ^9 -THC, delta-9-tetrahydrocannabinol; CBD, cannabidiol; CBN, Cannabinol; NA, not available; NOS, Newcastle-Ottawa scale for observational studies; NR, not reported, RoB, risk of bias for randomized controlled trials; THC, tetrahydrocannabinol; THCV, Tetrahydrocannabivarin

BIBLIOGRAPHY

1. Asbridge M, Mann R, Cusimano MD, et al. Cannabis and traffic collision risk: Findings from a case-crossover study of injured drivers presenting to emergency departments. *Int J Public Health*. 2014;59(2):395-404. doi:10.1007/s00038-013-0512-z
2. Bartholomew J, Holroyd S, Heffernan TM. Does cannabis use affect prospective memory in young adults? *Journal of Psychopharmacology*. 2010;24(2):241-246. doi:10.1177/0269881109106909
3. Battisti RA, Roodenrys S, Johnstone SJ, Respondek C, Hermens DF, Solowij N. Chronic use of cannabis and poor neural efficiency in verbal memory ability. *Psychopharmacology (Berl)*. 2010;209(4):319-330. doi:10.1007/s00213-010-1800-4
4. Beautrais AL, Joyce PR, Mulder RT. Cannabis abuse and serious suicide attempts. *Addiction*. 1999;94(8):1155-1164. doi:10.1046/j.1360-0443.1999.94811555.x
5. Bédard M, Dubois S, Weaver B. The Impact of Cannabis on Driving. *Canadian Journal of Public Health*. 2007;98(1):6-11. doi:10.1007/BF03405376
6. Bourque J, Mendrek A, Durand M, et al. Cannabis abuse is associated with better emotional memory in schizophrenia: A functional magnetic resonance imaging study. *Psychiatry Res Neuroimaging*. 2013;214(1):24-32. doi:10.1016/j.pscychresns.2013.05.012
7. Bowman M, Pihl RO. Cannabis: Psychological effects of chronic heavy use. *Psychopharmacologia*. 1973;29(2):159-170. doi:10.1007/BF00422648
8. Chye Y, Suo C, Yücel M, den Ouden L, Solowij N, Lorenzetti V. Cannabis-related hippocampal volumetric abnormalities specific to subregions in dependent users. *Psychopharmacology (Berl)*. 2017;234(14):2149-2157. doi:10.1007/s00213-017-4620-y
9. Chye Y, Lorenzetti V, Suo C, et al. Alteration to hippocampal volume and shape confined to cannabis dependence: a multi-site study. *Addiction Biology*. 2019;24(4):822-834. doi:10.1111/adb.12652
10. Croft RJ, Mackay AJ, Mills ATD, Gruzelier JGH. The relative contributions of ecstasy and cannabis to cognitive impairment. *Psychopharmacology (Berl)*. 2001;153(3):373-379. doi:10.1007/s002130000591
11. Cunha PJ, Rosa PGP, Ayres A de M, et al. Cannabis use, cognition and brain structure in first-episode psychosis. *Schizophr Res*. 2013;147(2-3):209-215. doi:10.1016/j.schres.2013.04.009
12. Cuyàs E, Verdejo-García A, Fagundo AB, et al. The influence of genetic and environmental factors among MDMA users in cognitive performance. *PLoS One*. 2011;6(11). doi:10.1371/journal.pone.0027206
13. Dafters RI, Hoshi R, Talbot AC. Contribution of cannabis and MDMA (“ecstasy”) to cognitive changes in long-term polydrug users. *Psychopharmacology (Berl)*. 2004;173(3-4):405-410. doi:10.1007/s00213-003-1561-4
14. di Forti M, Quattrone D, Freeman TP, et al. The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): a multicentre case-control study. *Lancet Psychiatry*. 2019;6(5):427-436. doi:10.1016/S2215-0366(19)30048-3

15. Drummer OH, Gerostamoulos J, Batziris H, et al. The involvement of drugs in drivers of motor vehicles killed in Australian road traffic crashes. *Accid Anal Prev.* 2004;36(2):239-248. doi:10.1016/S0001-4575(02)00153-7
16. Ferraro L, Russo M, O'Connor J, et al. Cannabis users have higher premorbid IQ than other patients with first onset psychosis. *Schizophr Res.* 2013;150(1):129-135. doi:10.1016/j.schres.2013.07.046
17. Fischer BA, McMahon RP, Kelly DL, et al. Risk-taking in schizophrenia and controls with and without cannabis dependence. *Schizophr Res.* 2015;161(2-3):471-477. doi:10.1016/j.schres.2014.11.009
18. Fisk JE, Montgomery C. Real-world memory and executive processes in cannabis users and non-users. *Journal of Psychopharmacology.* 2008;22(7):727-736. doi:10.1177/0269881107084000
19. Gjerde H, Normann PT, Christophersen AS, Samuelsen SO, Mørland J. Alcohol, psychoactive drugs and fatal road traffic accidents in Norway: A case-control study. *Accid Anal Prev.* 2011;43(3):1197-1203. doi:10.1016/j.aap.2010.12.034
20. Gmel G, Kuendig H, Rehm J, Schreyer N, Daepfen JB. Alcohol and cannabis use as risk factors for injury - A case-crossover analysis in a Swiss hospital emergency department. *BMC Public Health.* 2009;9. doi:10.1186/1471-2458-9-40
21. González-Pinto A, González-Ortega I, Alberich S, et al. Opposite Cannabis-Cognition Associations in Psychotic Patients Depending on Family History. van Amelsvoort T, ed. *PLoS One.* 2016;11(8):e0160949. doi:10.1371/journal.pone.0160949
22. Gouzoulis-Mayfrank E, Daumann J, Tuchtenhagen F, et al. *Impaired Cognitive Performance in Drug Free Users of Recreational Ecstasy (MDMA).*; 2000. <http://jnnp.bmj.com/>
23. Hels T, Lyckegaard A, Simonsen KW, Steentoft A, Bernhoft IM. Risk of severe driver injury by driving with psychoactive substances. *Accid Anal Prev.* 2013;59:346-356. doi:10.1016/j.aap.2013.06.003
24. Jacobsen LK, Pugh KR, Constable RT, Westerveld M, Mencl WE. Functional Correlates of Verbal Memory Deficits Emerging During Nicotine Withdrawal in Abstinent Adolescent Cannabis Users. *Biol Psychiatry.* 2007;61(1):31-40. doi:10.1016/j.biopsych.2006.02.014
25. Jockers-Scherübl MC, Wolf T, Radzei N, et al. Cannabis induces different cognitive changes in schizophrenic patients and in healthy controls. *Prog Neuropsychopharmacol Biol Psychiatry.* 2007;31(5):1054-1063. doi:10.1016/j.pnpbp.2007.03.006
26. Koenders L, Machielsen MWJ, van der Meer FJ, et al. Brain volume in male patients with recent onset schizophrenia with and without cannabis use disorders. *Journal of Psychiatry and Neuroscience.* 2015;40(3):197-206. doi:10.1503/jpn.140081
27. Krysta K, Krupka-Matuszczyk I, Janas-Kozik M, Stachowicz M, Szymaszal J, Rybakowski JK. Inferior performance on selected neuropsychological tests in abstinent schizophrenia patients who have used cannabis. *Medical Science Monitor.* 2012;18(9):CR581-CR586. doi:10.12659/MSM.883355

28. Kuypers KPC, Legrand SA, Ramaekers JG, Verstraete AG. A Case-Control Study Estimating Accident Risk for Alcohol, Medicines and Illegal Drugs. *PLoS One*. 2012;7(8). doi:10.1371/journal.pone.0043496
29. Laumon B, Gadegbeku B, Martin JL, Biecheler MB. Cannabis intoxication and fatal road crashes in France: Population based case-control study. *Br Med J*. 2005;331(7529):1371-1374. doi:10.1136/bmj.38648.617986.1F
30. Li G, Brady JE, Chen Q. Drug use and fatal motor vehicle crashes: A case-control study. *Accid Anal Prev*. 2013;60:205-210. doi:10.1016/j.aap.2013.09.001
31. Lowenstein SR, Koziol-McLain J. Drugs and Traffic Crash Responsibility: A Study of Injured Motorists in Colorado. *The Journal of Trauma: Injury, Infection, and Critical Care*. 2001;50(2):313-320. doi:10.1097/00005373-200102000-00019
32. Maremmani I, Lazzeri A, Pacini M, Lovrecic M, Placidi GF, Perugi G. Diagnostic and symptomatological features in chronic psychotic patients according to cannabis use status. *J Psychoactive Drugs*. 2004;36(2):235-241. doi:10.1080/02791072.2004.10399734
33. Martin JL, Gadegbeku B, Wu D, Viallon V, Laumon B. Cannabis, alcohol and fatal road accidents. *PLoS One*. 2017;12(11). doi:10.1371/journal.pone.0187320
34. Mathijssen R, Houwing S. *The Prevalence and Relative Risk of Drink and Drug Driving in the Netherlands: A Case-Control Study in the Tilburg Police District.*; 2005. Accessed December 11, 2022. <https://swov.nl/system/files/publication-downloads/r-2005-09.pdf>
35. Moreno-Alcázar A, Gonzalvo B, Canales-Rodríguez EJ, et al. Larger gray matter volume in the basal ganglia of heavy cannabis users detected by voxel-based morphometry and subcortical volumetric analysis. *Front Psychiatry*. 2018;9(MAY). doi:10.3389/fpsy.2018.00175
36. Movig KLL, Mathijssen MPM, Nagel PHA, et al. Psychoactive substance use and the risk of motor vehicle accidents. *Accid Anal Prev*. 2004;36(4):631-636. doi:10.1016/S0001-4575(03)00084-8
37. Mura P, Kintz P, Ludes B, et al. Comparison of the prevalence of alcohol, cannabis and other drugs between 900 injured drivers and 900 control subjects: Results of a French collaborative study. In: *Forensic Science International*. Vol 133. Elsevier Ireland Ltd; 2003:79-85. doi:10.1016/S0379-0738(03)00052-5
38. Peralta V, Cuesta MJ. Influence of cannabis abuse on schizophrenic psychopathology. *Acta Psychiatr Scand*. 1992;85(2):127-130. doi:10.1111/j.1600-0447.1992.tb01456.x
39. Poulsen H, Moar R, Pirie R. The culpability of drivers killed in New Zealand road crashes and their use of alcohol and other drugs. *Accid Anal Prev*. 2014;67:119-128. doi:10.1016/j.aap.2014.02.019
40. Pulido J, Barrio G, Lardelli P, et al. Cannabis Use and Traffic Injuries. *Epidemiology*. 2011;22(4):609-610. doi:10.1097/EDE.0b013e31821db0c2
41. Rehman IU, Farooq S. Schizophrenia and comorbid self reported cannabis abuse: impact on course, functioning and services use. *J Pak Med Assoc*. 2007;57(2):60-64. <http://www.ncbi.nlm.nih.gov/pubmed/17370785>

42. Rentzsch J, Buntebart E, Stadelmeier A, Gallinat J, Jockers-Scherübl MC. Differential effects of chronic cannabis use on preattentive cognitive functioning in abstinent schizophrenic patients and healthy subjects. *Schizophr Res*. 2011;130(1-3):222-227. doi:10.1016/j.schres.2011.05.011
43. Sánchez-Torres AM, Basterra V, Rosa A, et al. Lifetime cannabis use and cognition in patients with schizophrenia spectrum disorders and their unaffected siblings. *Eur Arch Psychiatry Clin Neurosci*. 2013;263(8):643-653. doi:10.1007/s00406-013-0404-5
44. Schacht JP, Hutchison KE, Filbey FM. Associations between cannabinoid receptor-1 (CNR1) variation and hippocampus and amygdala volumes in heavy cannabis users. *Neuropsychopharmacology*. 2012;37(11):2368-2376. doi:10.1038/npp.2012.92
45. Scholes KE, Martin-Iverson MT. Cannabis use and neuropsychological performance in healthy individuals and patients with schizophrenia. *Psychol Med*. 2010;40(10):1635-1646. doi:10.1017/S0033291709992078
46. Becker MP, Collins PF, Luciana M. Neurocognition in college-aged daily marijuana users. *J Clin Exp Neuropsychol*. 2014;36(4):379-398. doi:10.1080/13803395.2014.893996
47. Block RI, Ghoneim MM. *Effects of Chronic Marijuana Use on Human Cognition*. Vol 110. Springer-Verlag; 1993.
48. Block RI, O'Leary DS, Hichwa RD, et al. Effects of frequent marijuana use on memory-related regional cerebral blood flow. *Pharmacol Biochem Behav*. 2002;72(1-2):237-250. doi:10.1016/S0091-3057(01)00771-7
49. Blows S, Ivers RQ, Connor J, Ameratunga S, Woodward M, Norton R. Marijuana use and car crash injury. *Addiction*. 2005;100(5):605-611. doi:10.1111/j.1360-0443.2005.01100.x
50. Carlin AS, Trupin EW. *The Effect of Long-Term Chronic Marijuana Use on Neuropsychological Functioning*. Vol 12.; 1977.
51. Chang L, Yakupov R, Cloak C, Ernst T. Marijuana use is associated with a reorganized visual-attention network and cerebellar hypoactivation. *Brain*. 2006;129(5):1096-1112. doi:10.1093/brain/awl064
52. Daling JR, Doody DR, Sun X, et al. Association of marijuana use and the incidence of testicular germ cell tumors. *Cancer*. 2009;115(6):1215-1223. doi:10.1002/cncr.24159
53. Dougherty DM, Mathias CW, Dawes MA, et al. Impulsivity, attention, memory, and decision-making among adolescent marijuana users. *Psychopharmacology (Berl)*. 2013;226(2):307-319. doi:10.1007/s00213-012-2908-5
54. Filbey FM, Aslan S, Calhoun VD, et al. Long-term effects of marijuana use on the brain. *Proc Natl Acad Sci U S A*. 2014;111(47):16913-16918. doi:10.1073/pnas.1415297111
55. Filbey FM, McQueeney T, Kadamangudi S, Bice C, Ketcherside A. Combined effects of marijuana and nicotine on memory performance and hippocampal volume. *Behavioural Brain Research*. 2015;293:46-53. doi:10.1016/j.bbr.2015.07.029

56. Gillison ML, D'Souza G, Westra W, et al. Distinct risk factor profiles for human papillomavirus type 16-positive and human papillomavirus type 16-negative head and neck cancers. *J Natl Cancer Inst.* 2008;100(6):407-420. doi:10.1093/jnci/djn025
57. Hashibe M, Morgenstern H, Cui Y, et al. Marijuana use and the risk of lung and upper aerodigestive tract cancers: Results of a population-based case-control study. *Cancer Epidemiology Biomarkers and Prevention.* 2006;15(10):1829-1834. doi:10.1158/1055-9965.EPI-06-0330
58. Hayes JS, Dreher MC, Nugent JK. *Newborn Outcomes With Maternal Marijuana Use in Jamaican Women.*; 1988. Accessed December 20, 2022. https://cifas.us/pdf/Fieldwork%20and%20Research/Cannabis/Books/Dreher/1988_NewbornOutcomes_DreherEtal.pdf
59. Kung HC, Pearson JL, Liu X. Risk factors for male and female suicide decedents ages 15–64 in the United States. *Soc Psychiatry Psychiatr Epidemiol.* 2003;38(8):419-426. doi:10.1007/s00127-003-0656-x
60. Lacson JCA, Carroll JD, Tuazon E, Castelao EJ, Bernstein L, Cortessis VK. Population-based case-control study of recreational drug use and testis cancer risk confirms an association between marijuana use and nonseminoma risk. *Cancer.* 2012;118(21):5374-5383. doi:10.1002/cncr.27554
61. Li G, Chihuri S, Brady JE. Role of alcohol and marijuana use in the initiation of fatal two-vehicle crashes. *Ann Epidemiol.* 2017;27(5):342-347.e1. doi:10.1016/j.annepidem.2017.05.003
62. Liang C, McClean MD, Marsit C, et al. A population-based case-control study of marijuana use and head and neck squamous cell carcinoma. *Cancer Prevention Research.* 2009;2(8):759-768. doi:10.1158/1940-6207.CAPR-09-0048
63. Lyons MJ, Bar JL, Panizzon MS, et al. Neuropsychological consequences of regular marijuana use: A twin study. *Psychol Med.* 2004;34(7):1239-1250. doi:10.1017/S0033291704002260
64. Palacio C, García J, Diago J, et al. Identification of Suicide Risk Factors in Medellín, Colombia: A Case-Control Study of Psychological Autopsy in a Developing Country. *Archives of Suicide Research.* 2007;11(3):297-308. doi:10.1080/13811110600894223
65. Rosenblatt KA, Daling JR, Chen C, Sherman KJ, Schwartz SM. Marijuana Use and Risk of Oral Squamous Cell Carcinoma. *Cancer Res.* 2004;64(11):4049-4054. doi:10.1158/0008-5472.CAN-03-3425
66. Trabert B, Sigurdson AJ, Sweeney AM, Strom SS, McGlynn KA. Marijuana use and testicular germ cell tumors. *Cancer.* 2011;117(4):848-853. doi:10.1002/cncr.25499
67. Woratanarat P, Ingsathit A, Suriyawongpaisal P, et al. Alcohol, illicit and non-illicit psychoactive drug use and road traffic injury in Thailand: A case-control study. *Accid Anal Prev.* 2009;41(3):651-657. doi:10.1016/j.aap.2009.03.002
68. Zhang LR, Morgenstern H, Greenland S, et al. Cannabis smoking and lung cancer risk: Pooled analysis in the International Lung Cancer Consortium. *Int J Cancer.* 2015;136(4):894-903. doi:10.1002/ijc.29036
69. Arendt M, Munk-Jørgensen P, Sher L, Jensen SOW. Mortality following treatment for cannabis use disorders: Predictors and causes. *J Subst Abuse Treat.* 2013;44(4):400-406. doi:10.1016/j.jsat.2012.09.007

70. Arseneault L. Cannabis use in adolescence and risk for adult psychosis: longitudinal prospective study. *BMJ*. 2002;325(7374):1212-1213. doi:10.1136/bmj.325.7374.1212
71. Auther AM, Cadenhead KS, Carrión RE, et al. Alcohol confounds relationship between cannabis misuse and psychosis conversion in a high-risk sample. *Acta Psychiatr Scand*. 2015;132(1):60-68. doi:10.1111/acps.12382
72. Baeza I, Graell M, Moreno D, et al. Cannabis use in children and adolescents with first episode psychosis: Influence on psychopathology and short-term outcome (CAFEPS study). *Schizophr Res*. 2009;113(2-3):129-137. doi:10.1016/j.schres.2009.04.005
73. Barbeito S, Vega P, Ruiz de Azúa S, et al. Cannabis use and involuntary admission may mediate long-term adherence in first-episode psychosis patients: a prospective longitudinal study. *BMC Psychiatry*. 2013;13(1):326. doi:10.1186/1471-244X-13-326
74. Barrowclough C, Gregg L, Lobban F, Bucci S, Emsley R. The Impact of Cannabis Use on Clinical Outcomes in Recent Onset Psychosis. *Schizophr Bull*. 2015;41(2):382-390. doi:10.1093/schbul/sbu095
75. Beard JR, Dietrich UC, Brooks LO, Brooks RT, Heathcote K, Kelly B. Incidence and Outcomes of Mental Disorders in a Regional Population: The Northern Rivers Mental Health Study. *Australian & New Zealand Journal of Psychiatry*. 2006;40(8):674-682. doi:10.1080/j.1440-1614.2006.01867.x
76. Bovasso GB. Cannabis Abuse as a Risk Factor for Depressive Symptoms. *American Journal of Psychiatry*. 2001;158(12):2033-2037. doi:10.1176/appi.ajp.158.12.2033
77. Brown J, McKone E, Ward J. Deficits of long-term memory in ecstasy users are related to cognitive complexity of the task. *Psychopharmacology (Berl)*. 2010;209(1):51-67. doi:10.1007/s00213-009-1766-2
78. Caspari D. Cannabis and schizophrenia: results of a follow-up study. *Eur Arch Psychiatry Clin Neurosci*. 1999;249(1):45-49. doi:10.1007/s004060050064
79. Caspi A, Moffitt TE, Cannon M, et al. Moderation of the effect of adolescent-onset cannabis use on adult psychosis by a functional polymorphism in the catechol-O-methyltransferase gene: Longitudinal evidence of a gene X environment interaction. *Biol Psychiatry*. 2005;57(10):1117-1127. doi:10.1016/j.biopsych.2005.01.026
80. Clarke MC, Coughlan H, Harley M, et al. The impact of adolescent cannabis use, mood disorder and lack of education on attempted suicide in young adulthood. *World Psychiatry*. 2014;13(3):322-323. doi:10.1002/wps.20170
81. Coldham EL, Addington J, Addington D. Medication adherence of individuals with a first episode of psychosis. *Acta Psychiatr Scand*. 2002;106(4):286-290. doi:10.1034/j.1600-0447.2002.02437.x
82. Cousijn J, Wiers RW, Ridderinkhof KR, van den Brink W, Veltman DJ, Goudriaan AE. Effect of baseline cannabis use and working-memory network function on changes in cannabis use in heavy cannabis users: A prospective fMRI study. *Hum Brain Mapp*. 2014;35(5):2470-2482. doi:10.1002/hbm.22342
83. de la Serna E, Mayoral M, Baeza I, et al. Cognitive Functioning in Children and Adolescents in Their First Episode of Psychosis. *Journal of Nervous & Mental Disease*. 2010;198(2):159-162. doi:10.1097/NMD.0b013e3181cc0d41

84. Degenhardt L, Coffey C, Romaniuk H, et al. The persistence of the association between adolescent cannabis use and common mental disorders into young adulthood. *Addiction*. 2013;108(1):124-133. doi:10.1111/j.1360-0443.2012.04015.x
85. DeRosse P, Kaplan A, Burdick KE, Lencz T, Malhotra AK. Cannabis use disorders in schizophrenia: Effects on cognition and symptoms. *Schizophr Res*. 2010;120(1-3):95-100. doi:10.1016/j.schres.2010.04.007
86. Faridi K, Joobar R, Malla A. Medication adherence mediates the impact of sustained cannabis use on symptom levels in first-episode psychosis. *Schizophr Res*. 2012;141(1):78-82. doi:10.1016/j.schres.2012.07.023
87. Feingold D, Weiser M, Rehm J, Lev-Ran S. The association between cannabis use and anxiety disorders: Results from a population-based representative sample. *European Neuropsychopharmacology*. 2016;26(3):493-505. doi:10.1016/j.euroneuro.2015.12.037
88. Fergusson DM, Lynskey MT, Horwood LJ. *The Short-Term Consequences of Early Onset Cannabis Use*. Vol 24.; 1996.
89. Fergusson DM, Horwood LJ. The Christchurch Health and Development Study: Review of findings on child and adolescent mental health. *Australian and New Zealand Journal of Psychiatry*. 2001;35(3):287-296. doi:10.1046/j.1440-1614.2001.00902.x
90. Fergusson DM, Horwood LJ, Swain-Campbell N. Cannabis use and psychosocial adjustment in adolescence and young adulthood. *Addiction*. 2002;97(9):1123-1135. doi:10.1046/j.1360-0443.2002.00103.x
91. Fergusson DM, Horwood LJ, Swain-Campbell NR. Cannabis dependence and psychotic symptoms in young people. *Psychol Med*. 2003;33(1):15-21. doi:10.1017/S0033291702006402
92. Fergusson DM, Fergusson D, Horwood LJ, Ridder EM. Tests of causal linkages between cannabis use and psychotic symptoms. *Addiction*. 2005;100:354-366. doi:10.1111/j.1360-0443.2005.001001.x
93. Fergusson DM, Horwood LJ, Boden JM. Is driving under the influence of cannabis becoming a greater risk to driver safety than drink driving? Findings from a longitudinal study. *Accid Anal Prev*. 2008;40(4):1345-1350. doi:10.1016/j.aap.2008.02.005
94. Gage SH, Hickman M, Heron J, et al. Associations of cannabis and cigarette use with depression and anxiety at age 18: Findings from the Avon longitudinal study of parents and children. *PLoS One*. 2015;10(4). doi:10.1371/journal.pone.0122896
95. Saleh Gargari S, Fallahian M, Haghighi L, Hosseinezhad-Yazdi M, Dashti E, Dolan K. Maternal and neonatal complications of substance abuse in Iranian pregnant women. *Acta Med Iran*. 2012;50(6):411-416. <http://www.ncbi.nlm.nih.gov/pubmed/22837120>
96. Georgiades K, Boyle MH. Adolescent tobacco and cannabis use: Young adult outcomes from the Ontario Child Health Study. *J Child Psychol Psychiatry*. 2007;48(7):724-731. doi:10.1111/j.1469-7610.2007.01740.x
97. Gerberich S. Marijuana Use and Injury Events Resulting in Hospitalization, ,. *Ann Epidemiol*. 2003;13(4):230-237. doi:10.1016/S1047-2797(02)00411-8

98. Gibson GT, Baghurst PA, Colley DP. Maternal Alcohol, Tobacco and Cannabis Consumption and the Outcome of Pregnancy. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 1983;23(1):15-19. doi:10.1111/j.1479-828X.1983.tb00151.x
99. González-Pinto A, Reed C, Novick D, Bertsch J, Haro JM. Assessment of medication adherence in a cohort of patients with bipolar disorder. *Pharmacopsychiatry*. 2010;43(7):263-270. doi:10.1055/s-0030-1263169
100. González-Pinto A, Alberich S, Barbeito S, et al. Cannabis and first-episode psychosis: Different long-term outcomes depending on continued or discontinued use. *Schizophr Bull*. 2011;37(3):631-639. doi:10.1093/schbul/sbp126
101. Gray TR, Eiden RD, Leonard KE, Connors GJ, Shisler S, Huestis MA. Identifying prenatal cannabis exposure and effects of concurrent tobacco exposure on neonatal growth. *Clin Chem*. 2010;56(9):1442-1450. doi:10.1373/clinchem.2010.147876
102. Greenland S, Staisch KJ, Brown N, Gross SJ. The effects of marijuana use during pregnancy. I. A preliminary epidemiologic study. *Am J Obstet Gynecol*. 1982;143(4):408-413. doi:10.1016/0002-9378(82)90082-5
103. Greer GR, Grob CS, Halberstadt AL. PTSD Symptom Reports of Patients Evaluated for the New Mexico Medical Cannabis Program. *J Psychoactive Drugs*. 2014;46(1):73-77. doi:10.1080/02791072.2013.873843
104. Hadjiefthyvoulou F, Fisk JE, Montgomery C, Bridges N. Prospective memory functioning among ecstasy/polydrug users: Evidence from the Cambridge Prospective Memory Test (CAMPROMPT). *Psychopharmacology (Berl)*. 2011;215(4):761-774. doi:10.1007/s00213-011-2174-y
105. Hancox RJ, Shin HH, Gray AR, Poulton R, Sears MR. Effects of quitting cannabis on respiratory symptoms. *European Respiratory Journal*. 2015;46(1):80-87. doi:10.1183/09031936.00228914
106. Harder VS, Stuart EA, Anthony JC. Adolescent cannabis problems and young adult depression: Male-female stratified propensity score analyses. *Am J Epidemiol*. 2008;168(6):592-601. doi:10.1093/aje/kwn184
107. HATCH EE, BRACKEN MB. EFFECT OF MARIJUANA USE IN PREGNANCY ON FETAL GROWTH. *Am J Epidemiol*. 1986;124(6):986-993. doi:10.1093/oxfordjournals.aje.a114488
108. Henquet C, Krabbendam L, Spauwen J, et al. Prospective cohort study of cannabis use, predisposition for psychosis, and psychotic symptoms in young people. *BMJ*. 2005;330(7481):11. doi:10.1136/bmj.38267.664086.63
109. Henquet C, Krabbendam L, de Graaf R, ten Have M, van Os J. Cannabis use and expression of mania in the general population. *J Affect Disord*. 2006;95(1-3):103-110. doi:10.1016/j.jad.2006.05.002
110. Jones C, Donnelly N, Swift W. *Driving Under the Influence of Cannabis: The Problem and Potential Countermeasures.*; 2005.
111. Korver N, Nieman DH, Becker HE, et al. Symptomatology and Neuropsychological Functioning in Cannabis Using Subjects at Ultra-High Risk for Developing Psychosis and Healthy Controls. *Australian & New Zealand Journal of Psychiatry*. 2010;44(3):230-236. doi:10.3109/00048670903487118

112. Kovaszny B, Fleischer J, Tanenberg-Karant M, Jandorf L, Miller AD, Bromet E. Substance Use Disorder and the Early Course of Illness in Schizophrenia and Affective Psychosis. *Schizophr Bull.* 1997;23(2):195-201. doi:10.1093/schbul/23.2.195
113. Kuepper R, van Os J, Lieb R, Wittchen HU, Höfler M, Henquet C. Continued cannabis use and risk of incidence and persistence of psychotic symptoms: 10 Year follow-up cohort study. *BMJ.* 2011;342(7796):537. doi:10.1136/bmj.d738
114. Kumra S, Robinson P, Tambyraja R, et al. Parietal lobe volume deficits in adolescents with schizophrenia and adolescents with cannabis use disorders. *J Am Acad Child Adolesc Psychiatry.* 2012;51(2):171-180. doi:10.1016/j.jaac.2011.11.001
115. Leeson VC, Harrison I, Ron MA, Barnes TRE, Joyce EM. The effect of cannabis use and cognitive reserve on age at onset and psychosis outcomes in first-episode schizophrenia. *Schizophr Bull.* 2012;38(4):873-880. doi:10.1093/schbul/sbq153
116. Linszen DH. Cannabis Abuse and the Course of Recent-Onset Schizophrenic Disorders. *Arch Gen Psychiatry.* 1994;51(4):273. doi:10.1001/archpsyc.1994.03950040017002
117. Longo MC, Hunter CE, Lokan RJ, White JM, White MA. *The Prevalence of Alcohol, Cannabinoids, Benzodiazepines and Stimulants amongst Injured Drivers and Their Role in Driver Culpability Part II: The Relationship between Drug Prevalence and Drug Concentration, and Driver Culpability.* Vol 32.; 2000. www.elsevier.com/locate/aap
118. MacKie CJ, O'Leary-Barrett M, Al-Khudhairy N, et al. Adolescent bullying, cannabis use and emerging psychotic experiences: A longitudinal general population study. *Psychol Med.* 2013;43(5):1033-1044. doi:10.1017/S003329171200205X
119. Manrique-Garcia E, Zammit S, Dalman C, Hemmingsson T, Allebeck P. Cannabis use and depression: a longitudinal study of a national cohort of Swedish conscripts. *BMC Psychiatry.* 2012;12(1):112. doi:10.1186/1471-244X-12-112
120. Marmorstein NR, Iacono WG. Explaining associations between cannabis use disorders in adolescence and later major depression: A test of the psychosocial failure model. *Addictive Behaviors.* 2011;36(7):773-776. doi:10.1016/j.addbeh.2011.02.006
121. Martinez-Arevalo MJ, Calcedo-Ordoñez A, Varo-Prieto JR. Cannabis Consumption as a Prognostic Factor in Schizophrenia. *British Journal of Psychiatry.* 1994;164(5):679-681. doi:10.1192/bjp.164.5.679
122. Mata I, Rodríguez-Sánchez JM, Pelayo-Terán JM, et al. Cannabis abuse is associated with decision-making impairment among first-episode patients with schizophrenia-spectrum psychosis. *Psychol Med.* 2008;38(9):1257-1266. doi:10.1017/S0033291707002218
123. McCleery A, Addington J, Addington D. Substance misuse and cognitive functioning in early psychosis: A 2 year follow-up. *Schizophr Res.* 2006;88(1-3):187-191. doi:10.1016/j.schres.2006.06.040
124. McGrath J, Welham J, Scott J, et al. Association Between Cannabis Use and Psychosis-Related Outcomes Using Sibling Pair Analysis in a Cohort of Young Adults. *Arch Gen Psychiatry.* 2010;67(5):440. doi:10.1001/archgenpsychiatry.2010.6

125. Meier MH, Caspi A, Ambler A, et al. Persistent cannabis users show neuropsychological decline from childhood to midlife. *Proc Natl Acad Sci U S A*. 2012;109(40). doi:10.1073/pnas.1206820109
126. Meier MH, Caspi A, Cerdá M, et al. Associations Between Cannabis Use and Physical Health Problems in Early Midlife. *JAMA Psychiatry*. 2016;73(7):731. doi:10.1001/jamapsychiatry.2016.0637
127. Meier MH, Caspi A, Danese A, et al. Associations between adolescent cannabis use and neuropsychological decline: a longitudinal co-twin control study. *Addiction*. 2018;113(2):257-265. doi:10.1111/add.13946
128. Mokrysz C, Landy R, Gage SH, Munafò MR, Roiser JP, Curran H v. Are IQ and educational outcomes in teenagers related to their cannabis use? A prospective cohort study. *Journal of Psychopharmacology*. 2016;30(2):159-168. doi:10.1177/0269881115622241
129. Mustonen A, Niemelä S, Nordström T, et al. Adolescent cannabis use, baseline prodromal symptoms and the risk of psychosis. *British Journal of Psychiatry*. 2018;212(4):227-233. doi:10.1192/bjp.2017.52
130. Najman JM, Bor W, O'Callaghan M, Williams GM, Aird R, Shuttlewood G. Cohort Profile: The Mater-University of Queensland Study of Pregnancy (MUSP). *Int J Epidemiol*. 2005;34(5):992-997. doi:10.1093/ije/dyi119
131. Nordmann S, Vilotitch A, Roux P, et al. Daily cannabis and reduced risk of steatosis in human immunodeficiency virus and hepatitis C virus-co-infected patients (ANRS CO13-HEPAVIH). *J Viral Hepat*. 2018;25(2):171-179. doi:10.1111/jvh.12797
132. Patton GC. Cannabis use and mental health in young people: cohort study. *BMJ*. 2002;325(7374):1195-1198. doi:10.1136/bmj.325.7374.1195
133. Pedersen W. Does cannabis use lead to depression and suicidal behaviours? A population-based longitudinal study. *Acta Psychiatr Scand*. 2008;118(5):395-403. doi:10.1111/j.1600-0447.2008.01259.x
134. Price C, Hemmingsson T, Lewis G, Zammit S, Allebeck P. Cannabis and suicide: longitudinal study. *British Journal of Psychiatry*. 2009;195(6):492-497. doi:10.1192/bjp.bp.109.065227
135. Pritchard ER, Dayer L, Belz J, Forseth B, Harrington SE, Painter JT. Effect of cannabis on opioid use in patients with cancer receiving palliative care. *Journal of the American Pharmacists Association*. 2020;60(1):244-247. doi:10.1016/j.japh.2019.10.013
136. Rasic D, Weerasinghe S, Asbridge M, Langille DB. Longitudinal associations of cannabis and illicit drug use with depression, suicidal ideation and suicidal attempts among Nova Scotia high school students. *Drug Alcohol Depend*. 2013;129(1-2):49-53. doi:10.1016/j.drugalcdep.2012.09.009
137. Roberts RE, Roberts CR, Xing Y. One-Year Incidence of Suicide Attempts and Associated Risk and Protective Factors Among Adolescents. *Archives of Suicide Research*. 2010;14(1):66-78. doi:10.1080/13811110903479078
138. Rodríguez-Sánchez JM, Ayesa-Arriola R, Mata I, et al. Cannabis use and cognitive functioning in first-episode schizophrenia patients. *Schizophr Res*. 2010;124(1-3):142-151. doi:10.1016/j.schres.2010.08.017

139. Romano E, Voas RB, Camp B. Cannabis and crash responsibility while driving below the alcohol per se legal limit. *Accid Anal Prev.* 2017;108:37-43. doi:10.1016/j.aap.2017.08.003
140. Ross JM, Ellingson JM, Rhee SH, et al. Investigating the causal effect of cannabis use on cognitive function with a quasi-experimental co-twin design. *Drug Alcohol Depend.* 2020;206. doi:10.1016/j.drugalcdep.2019.107712
141. San L, Bernardo M, Gómez A, Peña M. Factors associated with relapse in patients with schizophrenia. *Int J Psychiatry Clin Pract.* 2013;17(1):2-9. doi:10.3109/13651501.2012.687452
142. Sara GE, Burgess PM, Malhi GS, Whiteford HA, Hall WC. Cannabis and stimulant disorders and readmission 2 years after first-episode psychosis. *British Journal of Psychiatry.* 2014;204(6):448-453. doi:10.1192/bjp.bp.113.135145
143. Saurel-Cubizolles MJ, Prunet C, Blondel B. Cannabis use during pregnancy in France in 2010. *BJOG.* 2014;121(8):971-977. doi:10.1111/1471-0528.12626
144. Schimmelmann BG, Conus P, Cotton S, Kupferschmid S, McGorry PD, Lambert M. Prevalence and impact of cannabis use disorders in adolescents with early onset first episode psychosis. *European Psychiatry.* 2012;27(6):463-469. doi:10.1016/j.eurpsy.2011.03.001
145. Silins E, Horwood LJ, Patton GC, et al. Young adult sequelae of adolescent cannabis use: an integrative analysis. *Lancet Psychiatry.* 2014;1(4):286-293. doi:10.1016/S2215-0366(14)70307-4
146. Smith AM, Longo CA, Fried PA, Hogan MJ, Cameron I. Effects of marijuana on visuospatial working memory: An fMRI Study in young adults. *Psychopharmacology (Berl).* 2010;210(3):429-438. doi:10.1007/s00213-010-1841-8
147. Soderstrom CA, Dischinger PC, Kufera JA, Ho SM, Shepard A. Crash culpability relative to age and sex for injured drivers using alcohol, marijuana or cocaine. *Annu Proc Assoc Adv Automot Med.* 2005;49:327-341. <http://www.ncbi.nlm.nih.gov/pubmed/16179157>
148. Solowij N, Jones KA, Rozman ME, et al. Verbal learning and memory in adolescent cannabis users, alcohol users and non-users. *Psychopharmacology (Berl).* 2011;216(1):131-144. doi:10.1007/s00213-011-2203-x
149. Sorbara F, Liraud F, Assens F, Abalan F, Verdoux H. Substance use and the course of early psychosis: A 2-year follow-up of first-admitted subjects. *European Psychiatry.* 2003;18(3):133-136. doi:10.1016/S0924-9338(03)00027-0
150. Stirling J, Lewis S, Hopkins R, White C. Cannabis use prior to first onset psychosis predicts spared neurocognition at 10-year follow-up. *Schizophr Res.* 2005;75(1):135-137. doi:10.1016/j.schres.2004.10.006
151. Strakowski SM, DelBello MP, Fleck DE, et al. Effects of Co-occurring Cannabis Use Disorders on the Course of Bipolar Disorder After a First Hospitalization for Mania. *Arch Gen Psychiatry.* 2007;64(1):57. doi:10.1001/archpsyc.64.1.57
152. Swift W, Coffey C, Carlin JB, Degenhardt L, Patton GC. Adolescent cannabis users at 24 years: Trajectories to regular weekly use and dependence in young adulthood. *Addiction.* 2008;103(8):1361-1370. doi:10.1111/j.1360-0443.2008.02246.x

153. Tait RJ, Mackinnon A, Christensen H. Cannabis use and cognitive function: 8-year trajectory in a young adult cohort. *Addiction*. 2011;106(12):2195-2203. doi:10.1111/j.1360-0443.2011.03574.x
154. Terhune KW. *The Role of Alcohol, Marijuana, and Other Drugs in the Accidents of Injured Drivers Volume 1-Findings.*; 1982.
155. Terhune KW, Ippolito CA, Hendricks DL. *The Incidence and Role of Drugs in Fatally Injured Driver.*; 1992. Accessed February 12, 2023. <https://doi.org/10.21949/1525574>
156. Tijssen MJA, van Os J, Wittchen HU, Lieb R, Beesdo K, Wichers M. Risk factors predicting onset and persistence of subthreshold expression of bipolar psychopathology among youth from the community. *Acta Psychiatr Scand*. 2010;122(3):255-266. doi:10.1111/j.1600-0447.2010.01539.x
157. Tzilos GK, Cintron CB, Wood JBR, et al. Lack of hippocampal volume change in long-term heavy cannabis users. *American Journal on Addictions*. 2005;14(1):64-72. doi:10.1080/10550490590899862
158. Valmaggia LR, Day FL, Jones C, et al. Cannabis use and transition to psychosis in people at ultra-high risk. *Psychol Med*. 2014;44(12):2503-2512. doi:10.1017/S0033291714000117
159. van der Meer FJ, Velthorst E. Course of cannabis use and clinical outcome in patients with non-affective psychosis: a 3-year follow-up study. *Psychol Med*. 2015;45(9):1977-1988. doi:10.1017/S0033291714003092
160. van Dijk D, Koeter MWJ, Hijman R, Kahn RS, van den Brink W. Effect of cannabis use on the course of schizophrenia in male patients: A prospective cohort study. *Schizophr Res*. 2012;137(1-3):50-57. doi:10.1016/j.schres.2012.01.016
161. van Gelder MMHJ, Reefhuis J, Caton AR, Werler MM, Druschel CM, Roeleveld N. Characteristics of pregnant illicit drug users and associations between cannabis use and perinatal outcome in a population-based study. *Drug Alcohol Depend*. 2010;109(1-3):243-247. doi:10.1016/j.drugalcdep.2010.01.007
162. van Laar M, van Dorsselaer S, Monshouwer K, de Graaf R. Does cannabis use predict the first incidence of mood and anxiety disorders in the adult population? *Addiction*. 2007;102(8):1251-1260. doi:10.1111/j.1360-0443.2007.01875.x
163. van Os J, Bak M, Hanssen M, Bijl R v., de Graaf R, Verdoux H. Cannabis use and psychosis: A longitudinal population-based study. *Am J Epidemiol*. 2002;156(4):319-327. doi:10.1093/aje/kwf043
164. van Ours JC, Williams J, Fergusson D, Horwood LJ. Cannabis use and suicidal ideation. *J Health Econ*. 2013;32(3):524-537. doi:10.1016/j.jhealeco.2013.02.002
165. Wade D, Harrigan S, Edwards J, Burgess PM, Whelan G, McGorry PD. Substance misuse in first-episode psychosis: 15-month prospective follow-up study. *British Journal of Psychiatry*. 2006;189(3):229-234. doi:10.1192/bjp.bp.105.017236
166. Wilcox HC, Anthony JC. The development of suicide ideation and attempts: an epidemiologic study of first graders followed into young adulthood. *Drug Alcohol Depend*. 2004;76(SUPPL.):S53-S67. doi:10.1016/j.drugalcdep.2004.08.007

167. Zammit S. Self reported cannabis use as a risk factor for schizophrenia in Swedish conscripts of 1969: historical cohort study. *BMJ*. 2002;325(7374):1199-1199. doi:10.1136/bmj.325.7374.1199
168. Zammit S, Owen MJ, Evans J, Heron J, Lewis G. Cannabis, COMT and psychotic experiences. *British Journal of Psychiatry*. 2011;199(5):380-385. doi:10.1192/bjp.bp.111.091421
169. Woodward MR, Harper DG, Stolyar A, Forester BP, Ellison JM. Dronabinol for the Treatment of Agitation and Aggressive Behavior in Acutely Hospitalized Severely Demented Patients with Noncognitive Behavioral Symptoms. *The American Journal of Geriatric Psychiatry*. 2014;22(4):415-419. doi:10.1016/j.jagp.2012.11.022
170. Walther S, Schüpbach B, Seifritz E, Homan P, Strik W. Randomized, Controlled Crossover Trial of Dronabinol, 2.5 mg, for Agitation in 2 Patients With Dementia. *J Clin Psychopharmacol*. 2011;31(2):256-258. doi:10.1097/JCP.0b013e31820e861c
171. Paton S, Kessler R, Kandel D. Depressive mood and adolescent illicit drug use: A longitudinal analysis. *Journal of Genetic Psychology*. 1977;131(2):267-289. doi:10.1080/00221325.1977.10533299
172. Bada HS, Das A, Bauer CR, et al. Low birth weight and preterm births: Etiologic fraction attributable to prenatal drug exposure. *Journal of Perinatology*. 2005;25(10):631-637. doi:10.1038/sj.jp.7211378
173. Bailey BA, Wood DL, Shah D. Impact of pregnancy marijuana use on birth outcomes: results from two matched population-based cohorts. *Journal of Perinatology*. 2020;40(10):1477-1482. doi:10.1038/s41372-020-0643-z
174. Berenson AB, Wilkinson GS, Lopez LA. Effects of Prenatal Care on Neonates Born to Drug-Using Women. *Subst Use Misuse*. 1996;31(8):1063-1076. doi:10.3109/10826089609072288
175. Borowsky IW, Ireland M, Resnick MD. Adolescent Suicide Attempts: Risks and Protectors. *Pediatrics*. 2001;107(3):485-493. doi:10.1542/peds.107.3.485
176. Brook JS, Cohen P, Brook DW. Longitudinal study of co-occurring psychiatric disorders and substance use. *J Am Acad Child Adolesc Psychiatry*. 1998;37(3):322-330. doi:10.1097/00004583-199803000-00018
177. Brook DW, Brook JS, Zhang C, Cohen P, Whiteman M. Drug Use and the Risk of Major Depressive Disorder, Alcohol Dependence, and Substance Use Disorders. *Arch Gen Psychiatry*. 2002;59(11):1039. doi:10.1001/archpsyc.59.11.1039
178. Brook JS, Lee JY, Brown EN, Finch SJ, Brook DW. Developmental trajectories of marijuana use from adolescence to adulthood: Personality and social role outcomes. *Psychol Rep*. 2011;108(2):339-357. doi:10.2466/10.18.PRO.108.2.339-357
179. Conner SN, Carter EB, Tuuli MG, MacOnes GA, Cahill AG. Maternal marijuana use and neonatal morbidity. In: *American Journal of Obstetrics and Gynecology*. Vol 213. Mosby Inc.; 2015:422.e1-422.e4. doi:10.1016/j.ajog.2015.05.050
180. Culver CM. Neuropsychological Assessment of Undergraduate Marijuana and LSD Users. *Arch Gen Psychiatry*. 1974;31(5):707. doi:10.1001/archpsyc.1974.01760170093015

181. Epstein-Ngo QM, Cunningham RM, Whiteside LK, et al. A daily calendar analysis of substance use and dating violence among high risk urban youth. *Drug Alcohol Depend.* 2013;130(1-3):194-200. doi:10.1016/j.drugalcdep.2012.11.006
182. Foshee VA, McNaughton Reyes HL, Ennett ST. Examination of sex and race differences in longitudinal predictors of the initiation of adolescent dating violence perpetration. *J Aggress Maltreat Trauma.* 2010;19(5):492-516. doi:10.1080/10926771.2010.495032
183. Fried PA, Watkinson B, Willan A. Marijuana use during pregnancy and decreased length of gestation. *Am J Obstet Gynecol.* 1984;150(1):23-27. doi:10.1016/S0002-9378(84)80103-9
184. Fried PA, Watkinson B, Gray R. Neurocognitive consequences of marihuana - A comparison with pre-drug performance. *Neurotoxicol Teratol.* 2005;27(2):231-239. doi:10.1016/j.ntt.2004.11.003
185. Hanson KL, Winward JL, Schweinsburg AD, Medina KL, Brown SA, Tapert SF. Longitudinal study of cognition among adolescent marijuana users over three weeks of abstinence. *Addictive Behaviors.* 2010;35(11):970-976. doi:10.1016/j.addbeh.2010.06.012
186. Hendershot CS, Magnan RE, Bryan AD. Associations of Marijuana Use and Sex-Related Marijuana Expectancies With HIV/STD Risk Behavior in High-Risk Adolescents. *Psychology of Addictive Behaviors.* 2010;24(3):404-414. doi:10.1037/a0019844
187. Hoffman MC, Hunter SK, D'Alessandro A, Noonan K, Wyrwa A, Freedman R. Interaction of maternal choline levels and prenatal Marijuana's effects on the offspring. *Psychol Med.* 2020;50(10):1716-1726. doi:10.1017/S003329171900179X
188. Jackson NJ, Isen JD, Khoddam R, et al. Impact of adolescent marijuana use on intelligence: Results from two longitudinal twin studies. *Proc Natl Acad Sci U S A.* 2016;113(5):E500-E508. doi:10.1073/pnas.1516648113
189. Jamieson LM, Gunthorpe W, Cairney SJ, Sayers SM, Roberts-Thomson KF, Slade GD. Substance use and periodontal disease among Australian Aboriginal young adults. *Addiction.* 2010;105(4):719-726. doi:10.1111/j.1360-0443.2009.02851.x
190. Juon HS, Ensminger ME. Childhood, Adolescent, and Young Adult Predictors of Suicidal Behaviors: A Prospective Study of African Americans. *Journal of Child Psychology and Psychiatry.* 1997;38(5):553-563. doi:10.1111/j.1469-7610.1997.tb01542.x
191. Kandel DB. Adult Sequelae of Adolescent Depressive Symptoms. *Arch Gen Psychiatry.* 1986;43(3):255. doi:10.1001/archpsyc.1986.01800030073007
192. Kerlin AM, Long M, Kappelman M, Martin C, Sandler RS. Profiles of Patients Who Use Marijuana for Inflammatory Bowel Disease. *Dig Dis Sci.* 2018;63(6):1600-1604. doi:10.1007/s10620-018-5040-5
193. Kim D, Kim W, Kwak MS, Chung GE, Yim JY, Ahmed A. Inverse association of marijuana use with nonalcoholic fatty liver disease among adults in the United States. *PLoS One.* 2017;12(10). doi:10.1371/journal.pone.0186702
194. Mark K, Desai A, Terplan M. Marijuana use and pregnancy: prevalence, associated characteristics, and birth outcomes. *Arch Womens Ment Health.* 2016;19(1):105-111. doi:10.1007/s00737-015-0529-9

195. McGee R, Williams S, Nada-Raja S. Is Cigarette Smoking Associated With Suicidal Ideation Among Young People? *American Journal of Psychiatry*. 2005;162(3):619-620. doi:10.1176/appi.ajp.162.3.619
196. McNaughton Reyes HL, Foshee VA, Bauer DJ, Ennett ST. Proximal and time-varying effects of cigarette, alcohol, marijuana and other hard drug use on adolescent dating aggression. *J Adolesc*. 2014;37(3):281-289. doi:10.1016/j.adolescence.2014.02.002
197. Melander LA, Noel H, Tyler KA. Bidirectional, unidirectional, and nonviolence: A comparison of the predictors among partnered young adults. *Violence Vict*. 2010;25(5):617-630. doi:10.1891/0886-6708.25.5.617
198. Metz TD, Allshouse AA, Hogue CJ, et al. Maternal marijuana use, adverse pregnancy outcomes, and neonatal morbidity. *Am J Obstet Gynecol*. 2017;217(4):478.e1-478.e8. doi:10.1016/j.ajog.2017.05.050
199. Phatak UP, Rojas-Velasquez D, Porto A, Pashankar DS. Prevalence and Patterns of Marijuana Use in Young Adults with Inflammatory Bowel Disease. *J Pediatr Gastroenterol Nutr*. 2017;64(2):261-264. doi:10.1097/MPG.0000000000001474
200. Pogge DL, Singer MB, Harvey PD. Rates and Predictors of Adherence with Atypical Antipsychotic Medication: A Follow-Up Study of Adolescent Inpatients. *J Child Adolesc Psychopharmacol*. 2005;15(6):901-912. doi:10.1089/cap.2005.15.901
201. Price JS, McQueeney T, Shollenbarger S, Browning EL, Wieser J, Lisdahl KM. Effects of marijuana use on prefrontal and parietal volumes and cognition in emerging adults. *Psychopharmacology (Berl)*. 2015;232(16):2939-2950. doi:10.1007/s00213-015-3931-0
202. Quinlivan JA, Evans SF. The impact of continuing illegal drug use on teenage pregnancy outcomes—a prospective cohort study. *BJOG*. 2002;109(10):1148-1153. doi:10.1111/j.1471-0528.2002.01536.x
203. Allegretti JR, Courtwright A, Lucci M, Korzenik JR, Levine J. Marijuana use patterns among patients with inflammatory bowel disease. *Inflamm Bowel Dis*. 2013;19(13):2809-2814. doi:10.1097/01.MIB.0000435851.94391.37
204. Rodriguez C. Marijuana use among young pregnant women: more common and more harmful than we think. *BJOG*. 2019;126(12):1498-1498. doi:10.1111/1471-0528.15919
205. Romano E, Torres-Saavedra P, Voas RB, Lacey JH. Drugs and Alcohol: Their Relative Crash Risk. *J Stud Alcohol Drugs*. 2014;75(1):56-64. doi:10.15288/jsad.2014.75.56
206. Shiono PH, Klebanoff MA, Nugent RP, et al. The impact of cocaine and marijuana use on low birth weight and preterm birth: A multicenter study. *Am J Obstet Gynecol*. 1995;172(1):19-27. doi:10.1016/0002-9378(95)90078-0
207. Shorey RC, Stuart GL, McNulty JK, Moore TM. Acute alcohol use temporally increases the odds of male perpetrated dating violence: A 90-day diary analysis. *Addictive Behaviors*. 2014;39(1):365-368. doi:10.1016/j.addbeh.2013.10.025
208. Shorey RC, Stuart GL, Moore TM, McNulty JK. The temporal relationship between alcohol, marijuana, angry affect, and dating violence perpetration: A daily diary study with female college students. *Psychology of Addictive Behaviors*. 2014;28(2):516-523. doi:10.1037/a0034648

209. Shorey RC, Fite PJ, Choi HJ, Cohen JR, Stuart GL, Temple JR. Dating Violence and Substance Use as Longitudinal Predictors of Adolescents' Risky Sexual Behavior. *Prevention Science*. 2015;16(6):853-861. doi:10.1007/s11121-015-0556-9
210. Stein Y, Hwang S, Liu CL, Diop H, Wymore E. The Association of Concomitant Maternal Marijuana Use on Health Outcomes for Opioid Exposed Newborns in Massachusetts, 2003-2009. In: *Journal of Pediatrics*. Vol 218. Mosby Inc.; 2020:238-242. doi:10.1016/j.jpeds.2019.10.071
211. Straub HL, Mou J, Drennan KJ, Pflugeisen BM. Maternal Marijuana Exposure and Birth Weight: An Observational Study Surrounding Recreational Marijuana Legalization. *Am J Perinatol*. 2021;38(1):065-075. doi:10.1055/s-0039-1694793
212. Tashkin DP, Simmons MS, Tseng CH. Impact of changes in regular use of marijuana and/or tobacco on chronic bronchitis. *COPD: Journal of Chronic Obstructive Pulmonary Disease*. 2012;9(4):367-374. doi:10.3109/15412555.2012.671868
213. Temple JR, Shorey RC, Fite P, Stuart GL, Le VD. Substance Use as a Longitudinal Predictor of the Perpetration of Teen Dating Violence. *J Youth Adolesc*. 2013;42(4):596-606. doi:10.1007/s10964-012-9877-1
214. TIEN AY, ANTHONY JC. Epidemiological Analysis of Alcohol and Drug Use as Risk Factors for Psychotic Experiences. *J Nerv Ment Dis*. 1990;178(8):473-480. doi:10.1097/00005053-199008000-00001
215. Visscher WA, Feder M, Burns AM, Brady TM, Bray RM. The impact of smoking and other substance use by urban women on the birthweight of their infants. *Subst Use Misuse*. 2003;38(8):1063-1093. doi:10.1081/JA-120017651
216. Weiland XJ, Thayer RE, Depue XE, Sabbineni A, Bryan AD, Hutchison KE. Daily Marijuana Use Is Not Associated with Brain Morphometric Measures in Adolescents or Adults. *Journal of Neuroscience*. 2015;35(4):1505-1512. doi:10.1523/JNEUROSCI.2946-14.2015
217. Wilkinson ST, Stefanovics E, Rosenheck RA. Marijuana Use Is Associated With Worse Outcomes in Symptom Severity and Violent Behavior in Patients With Posttraumatic Stress Disorder. *J Clin Psychiatry*. 2015;76(09):1174-1180. doi:10.4088/JCP.14m09475
218. Witter F, Niebyl J. Marijuana Use in Pregnancy and Pregnancy Outcome. *Am J Perinatol*. 1990;7(01):36-38. doi:10.1055/s-2007-999442
219. Zhang X, Wu LT. Suicidal ideation and substance use among adolescents and young adults: A bidirectional relation? *Drug Alcohol Depend*. 2014;142:63-73. doi:10.1016/j.drugalcdep.2014.05.025
220. Zuckerman B, Frank DA, Hingson R, et al. Effects of Maternal Marijuana and Cocaine Use on Fetal Growth. *New England Journal of Medicine*. 1989;320(12):762-768. doi:10.1056/NEJM198903233201203
221. Barlowe TS, Koliiani-Pace JL, Smith KD, Gordon SR, Gardner TB. Effects of Medical Cannabis on Use of Opioids and Hospital Visits by Patients With Painful Chronic Pancreatitis. *Clinical Gastroenterology and Hepatology*. 2019;17(12):2608-2609.e1. doi:10.1016/j.cgh.2019.01.018
222. O'Connell M, Sandgren M, Frantzen L, Bower E, Erickson B. Medical Cannabis: Effects on Opioid and Benzodiazepine Requirements for Pain Control. *Annals of Pharmacotherapy*. 2019;53(11):1081-1086. doi:10.1177/1060028019854221

223. Vigil JM, Stith SS, Adams IM, Reeve AP. Associations between medical cannabis and prescription opioid use in chronic pain patients: A preliminary cohort study. *PLoS One*. 2017;12(11). doi:10.1371/journal.pone.0187795
224. Yassin M, Oron A, Robinson D. Effect of adding medical cannabis to analgesic treatment in patients with low back pain related to fibromyalgia: an observational cross-over single centre study. *Clin Exp Rheumatol*. 2019;37 Suppl 116(1):13-20. <http://www.ncbi.nlm.nih.gov/pubmed/30418116>
225. Pawasarat IM, Schultz EM, Frisby JC, et al. The Efficacy of Medical Marijuana in the Treatment of Cancer-Related Pain. *J Palliat Med*. 2020;23(6):809-816. doi:10.1089/jpm.2019.0374
226. Maida V, Ennis M, Irani S, Corbo M, Dolzhykov M. Adjunctive nabilone in cancer pain and symptom management: a prospective observational study using propensity scoring. *J Support Oncol*. 2008;6(3):119-124. Accessed February 12, 2023. <http://www.ncbi.nlm.nih.gov/pubmed/18402303>
227. Cameron C, Watson D, Robinson J. Use of a Synthetic Cannabinoid in a Correctional Population for Posttraumatic Stress Disorder–Related Insomnia and Nightmares, Chronic Pain, Harm Reduction, and Other Indications. *J Clin Psychopharmacol*. 2014;34(5):559-564. doi:10.1097/JCP.000000000000180
228. Capano A, Weaver R, Burkman E. Evaluation of the effects of CBD hemp extract on opioid use and quality of life indicators in chronic pain patients: a prospective cohort study. *Postgrad Med*. 2020;132(1):56-61. doi:10.1080/00325481.2019.1685298
229. Adejumo AC, Alliu S, Ajayi TO, et al. Cannabis use is associated with reduced prevalence of non-alcoholic fatty liver disease: A cross-sectional study. *PLoS One*. 2017;12(4). doi:10.1371/journal.pone.0176416
230. Asbridge M, Poulin C, Donato A. Motor vehicle collision risk and driving under the influence of cannabis: Evidence from adolescents in Atlantic Canada. *Accid Anal Prev*. 2005;37(6):1025-1034. doi:10.1016/j.aap.2005.05.006
231. Ashtari M, Avants B, Cyckowski L, et al. Medial temporal structures and memory functions in adolescents with heavy cannabis use. *J Psychiatr Res*. 2011;45(8):1055-1066. doi:10.1016/j.jpsychires.2011.01.004
232. Bahorik AL, Newhill CE, Eack SM. Neurocognitive functioning of individuals with Schizophrenia: Using and not using drugs. *Schizophr Bull*. 2014;40(4):856-867. doi:10.1093/schbul/sbt099
233. Bersani G, Orlandi V, Kotzalidis GD, Pancheri P. Cannabis and schizophrenia: Impact on onset, course, psychopathology and outcomes. *Eur Arch Psychiatry Clin Neurosci*. 2002;252(2):86-92. doi:10.1007/s00406-002-0366-5
234. Borschmann R, Coffey C, Moran P, et al. Self-Harm in Young Offenders. *Suicide Life Threat Behav*. 2014;44(6):641-652. doi:10.1111/sltb.12096
235. Churchwell JC, Lopez-Larson M, Yurgelun-Todd DA. Altered frontal cortical volume and decision making in adolescent cannabis users. *Front Psychol*. 2010;1(DEC). doi:10.3389/fpsyg.2010.00225
236. Chye Y, Solowij N, Ganella EP, et al. Role of orbitofrontal sulcogyral pattern on lifetime cannabis use and depressive symptoms. *Prog Neuropsychopharmacol Biol Psychiatry*. 2017;79:392-400. doi:10.1016/j.pnpbp.2017.07.017

237. Chye Y, Solowij N, Suo C, et al. Orbitofrontal and caudate volumes in cannabis users: a multi-site mega-analysis comparing dependent versus non-dependent users. *Psychopharmacology (Berl)*. 2017;234(13):1985-1995. doi:10.1007/s00213-017-4606-9
238. Cuttler C, McLaughlin RJ, Graf P. Mechanisms underlying the link between cannabis use and prospective memory. *PLoS One*. 2012;7(5). doi:10.1371/journal.pone.0036820
239. Dharmawardene V, Menkes DB. Violence and self-harm in severe mental illness: Inpatient study of associations with ethnicity, cannabis and alcohol. *Australasian Psychiatry*. 2017;25(1):28-31. doi:10.1177/1039856216671650
240. Estrada G, Fatjó-Vilas M, Muñoz MJ, et al. Cannabis use and age at onset of psychosis: Further evidence of interaction with COMT Val158Met polymorphism. *Acta Psychiatr Scand*. 2011;123(6):485-492. doi:10.1111/j.1600-0447.2010.01665.x
241. Fonseca-Pedrero E, Lucas-Molina B, Pérez-Albéniz A, Inchausti F, Ortuño-Sierra J. Experiencias psicóticas atenuadas y consumo de cannabis en adolescentes de la población general. *Adicciones*. 2019;32(1):41. doi:10.20882/adicciones.1149
242. Gilman JM, Kuster JK, Lee S, et al. Cannabis use is quantitatively associated with nucleus accumbens and amygdala abnormalities in young adult recreational users. *Journal of Neuroscience*. 2014;34(16):5529-5538. doi:10.1523/JNEUROSCI.4745-13.2014
243. Gonzalez R, Schuster RM, Mermelstein RJ, Vassileva J, Martin EM, Diviak KR. Performance of young adult cannabis users on neurocognitive measures of impulsive behavior and their relationship to symptoms of cannabis use disorders. *J Clin Exp Neuropsychol*. 2012;34(9):962-976. doi:10.1080/13803395.2012.703642
244. GRANT I, ROCHFORD J, FLEMING T, STUNKARD A. A NEUROPSYCHOLOGICAL ASSESSMENT OF THE EFFECTS OF MODERATE MARIJUANA USE. *J Nerv Ment Dis*. 1973;156(4):278-280. doi:10.1097/00005053-197304000-00008
245. Guvendeger Doksat N, Zahmacioglu O, Ciftci Demirci A, Kocaman GM, Erdogan A. Association of Suicide Attempts and Non-Suicidal Self-Injury Behaviors With Substance Use and Family Characteristics Among Children and Adolescents Seeking Treatment for Substance Use Disorder. *Subst Use Misuse*. 2017;52(5):604-613. doi:10.1080/10826084.2016.1245745
246. Harley M, Kelleher I, Clarke M, et al. Cannabis use and childhood trauma interact additively to increase the risk of psychotic symptoms in adolescence. *Psychol Med*. 2010;40(10):1627-1634. doi:10.1017/S0033291709991966
247. Honarmand K, Tierney MC, O'Connor P, Feinstein A. Effects of cannabis on cognitive function in patients with multiple sclerosis. *Neurology*. 2011;76(13):1153-1160. doi:10.1212/WNL.0b013e318212ab0c
248. Hooper SR, Woolley D, de Bellis MD. Intellectual, neurocognitive, and academic achievement in abstinent adolescents with cannabis use disorder. *Psychopharmacology (Berl)*. 2014;231(8):1467-1477. doi:10.1007/s00213-014-3463-z
249. Houston JE, Murphy J, Shevlin M, Adamson G. Cannabis use and psychosis: Re-visiting the role of childhood trauma. *Psychol Med*. 2011;41(11):2339-2348. doi:10.1017/S0033291711000559

250. Jager G, van Hell HH, de Win MML, et al. Effects of frequent cannabis use on hippocampal activity during an associative memory task. *European Neuropsychopharmacology*. 2007;17(4):289-297. doi:10.1016/j.euroneuro.2006.10.003
251. Jager G, Block RI, Luijten M, Ramsey NF. Cannabis Use and Memory Brain Function in Adolescent Boys: A Cross-Sectional Multicenter Functional Magnetic Resonance Imaging Study. *J Am Acad Child Adolesc Psychiatry*. 2010;49(6):561-572.e3. doi:10.1016/j.jaac.2010.02.001
252. Jónsdóttir H, Opjordsmoen S, Birkenaes AB, et al. Predictors of medication adherence in patients with schizophrenia and bipolar disorder. *Acta Psychiatr Scand*. 2012;127(1):23-33. doi:10.1111/j.1600-0447.2012.01911.x
253. Kiang M, Christensen BK, Streiner DL, Roy C, Patriciu I, Zipursky RB. Association of abnormal semantic processing with delusion-like ideation in frequent cannabis users: An electrophysiological study. *Psychopharmacology (Berl)*. 2013;225(1):95-104. doi:10.1007/s00213-012-2800-3
254. Lamers CTJ, Bechara A, Rizzo M, Ramaekers JG. Cognitive function and mood in MDMA/THC users, THC users and non-drug using controls. *Journal of Psychopharmacology*. 2006;20(2):302-311. doi:10.1177/0269881106059495
255. Lev-Ran S, Segev A, Braw Y, Levkovitz Y. Neurocognitive functions of heavy cannabis using schizophrenia patients. *European Psychiatry*. 2012;27(5):365-368. doi:10.1016/j.eurpsy.2011.04.010
256. Løberg EM, Nygård M, Berle JO, et al. An fMRI study of neuronal activation in schizophrenia patients with and without previous cannabis use. *Front Psychiatry*. 2012;3(OCT). doi:10.3389/fpsy.2012.00094
257. Mann RE, Adlaf E, Zhao J, et al. Cannabis use and self-reported collisions in a representative sample of adult drivers. *J Safety Res*. 2007;38(6):669-674. doi:10.1016/j.jsr.2007.09.004
258. McHale S, Hunt N. Executive function deficits in short-term abstinent cannabis users. *Hum Psychopharmacol*. 2008;23(5):409-415. doi:10.1002/hup.941
259. Messinis L, Kyprianidou A, Malefaki S, Papathanasopoulos P. Neuropsychological deficits in long-term frequent cannabis users. *Neurology*. 2006;66(5):737-739. doi:10.1212/01.wnl.0000201279.83203.c6
260. Morgan CJA, Rothwell E, Atkinson H, Mason O, Curran HV. Hyper-priming in cannabis users: A naturalistic study of the effects of cannabis on semantic memory function. *Psychiatry Res*. 2010;176(2-3):213-218. doi:10.1016/j.psychres.2008.09.002
261. Morgan CJA, Duffin S, Hunt S, Monaghan L, Mason O, Curran H v. Neurocognitive function and schizophrenia-proneness in individuals dependent on ketamine, on high potency cannabis (skunk) or on cocaine. *Pharmacopsychiatry*. 2012;45(7):269-274. doi:10.1055/s-0032-1306310
262. Negrete JC, Knapp WP, Douglas DE, Smith WB. *Cannabis Affects the Severity of Schizophrenic Symptoms: Results of a Clinical Survey*. Vol 16.; 1986.
263. Nestor L, Roberts G, Garavan H, Hester R. Deficits in learning and memory: Parahippocampal hyperactivity and frontocortical hypoactivity in cannabis users. *Neuroimage*. 2008;40(3):1328-1339. doi:10.1016/j.neuroimage.2007.12.059

264. Núñez C, Ochoa S, Huerta-Ramos E, et al. Cannabis use and cognitive function in first episode psychosis: differential effect of heavy use. *Psychopharmacology (Berl)*. 2016;233(5):809-821. doi:10.1007/s00213-015-4160-2
265. Paruk S, Jhazbhai K, Singh K, Sartorius B, Burns JK. A comparative study of socio-demographic and substance use correlates in early-onset psychosis. *Early Interv Psychiatry*. 2018;12(3):339-347. doi:10.1111/eip.12330
266. Pope HG, Gruber AJ, Hudson JI, Cohane G, Huestis MA, Yurgelun-Todd D. Early-onset cannabis use and cognitive deficits: What is the nature of the association? *Drug Alcohol Depend*. 2003;69(3):303-310. doi:10.1016/S0376-8716(02)00334-4
267. Pujol J, Blanco-Hinojo L, Batalla A, et al. Functional connectivity alterations in brain networks relevant to self-awareness in chronic cannabis users. *J Psychiatr Res*. 2014;51(1):68-78. doi:10.1016/j.jpsychires.2013.12.008
268. Quednow BB, Jessen F, Kühn KU, Maier W, Daum I, Wagner M. Memory deficits in abstinent MDMA (ecstasy) users: Neuropsychological evidence of frontal dysfunction. *Journal of Psychopharmacology*. 2006;20(3):373-384. doi:10.1177/0269881106061200
269. Rabin RA, Zakzanis KK, Daskalakis ZJ, George TP. Effects of cannabis use status on cognitive function, in males with schizophrenia. *Psychiatry Res*. 2013;206(2-3):158-165. doi:10.1016/j.psychres.2012.11.019
270. Ray R, Prabhu GG, Mohan D, Nath LM, Neki JS. The association between chronic cannabis use and cognitive functions. *Drug Alcohol Depend*. 1978;3(5):365-368. doi:10.1016/0376-8716(78)90006-6
271. Ringen PA, Vaskinn A, Sundet K, et al. Opposite relationships between cannabis use and neurocognitive functioning in bipolar disorder and schizophrenia. *Psychol Med*. 2010;40(8):1337-1347. doi:10.1017/S0033291709991620
272. Rodgers J. Cognitive performance amongst recreational users of "ecstasy." *Psychopharmacology (Berl)*. 2000;151(1):19-24. doi:10.1007/s002130000467
273. Rossow I, Hawton K, Ystgaard M. Cannabis use and deliberate self-harm in adolescence: A comparative analysis of associations in England and Norway. *Archives of Suicide Research*. 2009;13(4):340-348. doi:10.1080/13811110903266475
274. Salyers MP, Mueser KT. Social functioning, psychopathology, and medication side effects in relation to substance use and abuse in schizophrenia. *Schizophr Res*. 2001;48(1):109-123. doi:10.1016/S0920-9964(00)00063-3
275. Schweinsburg AD, Schweinsburg BC, Nagel BJ, Eyster LT, Tapert SF. Neural correlates of verbal learning in adolescent alcohol and marijuana users. *Addiction*. 2011;106(3):564-573. doi:10.1111/j.1360-0443.2010.03197.x
276. Schnell T, Koethe D, Daumann J, Gouzoulis-Mayfrank E. The role of cannabis in cognitive functioning of patients with schizophrenia. *Psychopharmacology (Berl)*. 2009;205(1):45-52. doi:10.1007/s00213-009-1512-9
277. Scott J, Martin G, Bor W, Sawyer M, Clark J, McGrath J. The prevalence and correlates of hallucinations in Australian adolescents: Results from a national survey. *Schizophr Res*. 2009;107(2-3):179-185. doi:10.1016/j.schres.2008.11.002

278. Shariff JA, Ahluwalia KP, Papapanou PN. Relationship Between Frequent Recreational Cannabis (Marijuana and Hashish) Use and Periodontitis in Adults in the United States: National Health and Nutrition Examination Survey 2011 to 2012. *J Periodontol*. 2017;88(3):273-280. doi:10.1902/jop.2016.160370
279. Smith MJ, Cobia DJ, Wang L, et al. Cannabis-Related Working Memory Deficits and Associated Subcortical Morphological Differences in Healthy Individuals and Schizophrenia Subjects. *Schizophr Bull*. 2014;40(2):287-299. doi:10.1093/schbul/sbt176
280. Solowij N. Cognitive Functioning of Long-term Heavy Cannabis Users Seeking Treatment. *JAMA*. 2002;287(9):1123. doi:10.1001/jama.287.9.1123
281. Soueif MI. DIFFERENTIAL ASSOCIATION BETWEEN CHRONIC CANNABIS USE AND BRAIN FUNCTION DEFICITS. *Ann N Y Acad Sci*. 1976;282(1 Chronic Canna):323-343. doi:10.1111/j.1749-6632.1976.tb49907.x
282. Takagi M, Yücel M, Cotton SM, et al. *Verbal Memory, Learning, and Executive Functioning Among Adolescent Inhalant and Cannabis Users**; 2011.
283. Tamm L, Epstein JN, Lisdahl KM, et al. Impact of ADHD and cannabis use on executive functioning in young adults. *Drug Alcohol Depend*. 2013;133(2):607-614. doi:10.1016/j.drugalcdep.2013.08.001
284. Taurah L, Chandler C, Sanders G. Depression, impulsiveness, sleep, and memory in past and present polydrug users of 3,4-methylenedioxymethamphetamine (MDMA, ecstasy). *Psychopharmacology (Berl)*. 2014;231(4):737-751. doi:10.1007/s00213-013-3288-1
285. Thames AD, Arbid N, Sayegh P. Cannabis use and neurocognitive functioning in a non-clinical sample of users. *Addictive Behaviors*. 2014;39(5):994-999. doi:10.1016/j.addbeh.2014.01.019
286. Varma VK, Malhotra AK, Dang R, Das K, Nehra R. Cannabis and cognitive functions: A prospective study. *Drug Alcohol Depend*. 1988;21(2):147-152. doi:10.1016/0376-8716(88)90061-0
287. Verdejo-García A, Beatriz Fagundo A, Cuenca A, et al. COMT val158met and 5-HTTLPR genetic polymorphisms moderate executive control in cannabis users. *Neuropsychopharmacology*. 2013;38(8):1598-1606. doi:10.1038/npp.2013.59
288. Wadsworth EJK, Moss SC, Simpson SA, Smith AP. Cannabis use, cognitive performance and mood in a sample of workers. *Journal of Psychopharmacology*. 2006;20(1):14-23. doi:10.1177/0269881105056644
289. Wiles NJ, Zammit S, Bebbington P, Singleton N, Meltzer H, Lewis G. Self-reported psychotic symptoms in the general population. *British Journal of Psychiatry*. 2006;188(6):519-526. doi:10.1192/bjp.bp.105.012179
290. Williams AF, Peat MA, Crouch DJ, Wells JK, Finkle BS. Drugs in fatally injured young male drivers. *Public Health Rep*. 1985;100(1):19-25. <http://www.ncbi.nlm.nih.gov/pubmed/3918318>
291. Yücel M, Solowij N, Respondek C, et al. Regional Brain Abnormalities Associated With Long-term Heavy Cannabis Use. *Arch Gen Psychiatry*. 2008;65(6):694. doi:10.1001/archpsyc.65.6.694

292. Shannon S, Lewis N, Lee H, Hughes S. Cannabidiol in Anxiety and Sleep: A Large Case Series. *Perm J*. 2019;23(1):18-041. doi:10.7812/TPP/18-041
293. Bailey S, Camlin C, Ennett S. Substance use and risky sexual behavior among homeless and runaway youth. *Journal of Adolescent Health*. 1998;23(6):378-388. doi:10.1016/S1054-139X(98)00033-0
294. Bailey BA, Byrom AR. Factors predicting birth weight in a low-risk sample: The role of modifiable pregnancy health behaviors. *Matern Child Health J*. 2007;11(2):173-179. doi:10.1007/s10995-006-0150-7
295. Chang L, Cloak C, Yakupov R, Ernst T. Combined and independent effects of chronic marijuana use and HIV on brain metabolites. *Journal of Neuroimmune Pharmacology*. 2006;1(1):65-76. doi:10.1007/s11481-005-9005-z
296. de Boni R, Bozzetti MC, Hilgert J, et al. Factors associated with alcohol and drug use among traffic crash victims in southern Brazil. *Accid Anal Prev*. 2011;43(4):1408-1413. doi:10.1016/j.aap.2011.02.016
297. Eaton DK, Davis KS, Barrios L, Brener ND, Noonan RK. Associations of dating violence victimization with lifetime participation, co-occurrence, and early initiation of risk behaviors among U.S. high school students. *J Interpers Violence*. 2007;22(5):585-602. doi:10.1177/0886260506298831
298. Giletta M, Scholte RHJ, Engels RCME, Ciairano S, Prinstein MJ. Adolescent non-suicidal self-injury: A cross-national study of community samples from Italy, the Netherlands and the United States. *Psychiatry Res*. 2012;197(1-2):66-72. doi:10.1016/j.psychres.2012.02.009
299. Greenland S, Richwald GA, Honda GD. The effects of marijuana use during pregnancy. II. A study in a low-risk home-delivery population. *Drug Alcohol Depend*. 1983;11(3-4):359-366. doi:10.1016/0376-8716(83)90026-1
300. Kingree JB, Braithwaite R, Woodring T. *Unprotected Sex as a Function of Alcohol and Marijuana Use Among Adolescent Detainees*. Vol 27.; 1999.
301. Kingree JB, Phan D. Marijuana use and unprotected sexual intercourse among adolescent detainees: An event analysis. *Crim Justice Behav*. 2002;29(6):705-717. doi:10.1177/009385402237923
302. Kingree JB, Betz H. Risky sexual behavior in relation to marijuana and alcohol use among African-American, male adolescent detainees and their female partners. *Drug Alcohol Depend*. 2003;72(2):197-203. doi:10.1016/S0376-8716(03)00196-0
303. Leigh BC, Ames SL, Stacy AW. Alcohol, drugs, and condom use among drug offenders: An event-based analysis. *Drug Alcohol Depend*. 2008;93(1-2):38-42. doi:10.1016/j.drugalcdep.2007.08.012
304. Levy S, Weitzman ER. Acute Mental Health Symptoms in Adolescent Marijuana Users. *JAMA Pediatr*. 2019;173(2):185-186. doi:10.1001/jamapediatrics.2018.3811
305. Linn S, Schoenbaum SC, Monson RR, Rosner R, Stubblefield PC, Ryan KJ. The association of marijuana use with outcome of pregnancy. *Am J Public Health*. 1983;73(10):1161-1164. doi:10.2105/AJPH.73.10.1161

306. Mahmood OM, Jacobus J, Bava S, Scarlett A, Tapert SF. Learning and Memory Performances in Adolescent Users of Alcohol and Marijuana: Interactive Effects. *J Stud Alcohol Drugs*. 2010;71(6):885-894. doi:10.15288/jsad.2010.71.885
307. Mass R, Bardong C, Kindl K, Dahme B. *Relationship between Cannabis Use, Schizotypal Traits, and Cognitive Function in Healthy Subjects*. Vol 34.; 2001. www.karger.comwww.karger.com/journals/psp
308. McMahan JM, Tortu S, Pouget ER, Hamid R, Neaigus A. Contextual determinants of condom use among female sex exchangers in East Harlem, NYC: An event analysis. *AIDS Behav*. 2006;10(6):731-741. doi:10.1007/s10461-006-9093-7
309. MEDINA KL, HANSON KL, SCHWEINSBURG AD, COHEN-ZION M, NAGEL BJ, TAPERT SF. Neuropsychological functioning in adolescent marijuana users: Subtle deficits detectable after a month of abstinence. *Journal of the International Neuropsychological Society*. 2007;13(05). doi:10.1017/S1355617707071032
310. Medina KL, Nagel BJ, Park A, Mcqueeny T, Tapert SF. Depressive symptoms in adolescents: Associations with white matter volume and marijuana use. *J Child Psychol Psychiatry*. 2007;48(6):592-600. doi:10.1111/j.1469-7610.2007.01728.x
311. Medina KL, Schweinsburg AD, Cohen-Zion M, Nagel BJ, Tapert SF. Effects of alcohol and combined marijuana and alcohol use during adolescence on hippocampal volume and asymmetry. *Neurotoxicol Teratol*. 2007;29(1):141-152. doi:10.1016/j.ntt.2006.10.010
312. Mir MU, Khan I, Ahmed B, Razzak JA. Alcohol and marijuana use while driving--an unexpected crash risk in Pakistani commercial drivers: a cross-sectional survey. *BMC Public Health*. 2012;12(1):145. doi:10.1186/1471-2458-12-145
313. Muula AS, Siziya S, Rudatsikira E. Self-inflicted serious injuries among adolescents in Zambia. *Tanzan J Health Res*. 2013;15(1). doi:10.4314/thrb.v15i1.7
314. Nabors EL. Drug use and intimate partner violence among college students: An in-depth exploration. *J Interpers Violence*. 2010;25(6):1043-1063. doi:10.1177/0886260509340543
315. Ortiz AP, González D, Ramos J, Muñoz C, Reyes JC, Pérez CM. Association of marijuana use with oral HPV infection and periodontitis among Hispanic adults: Implications for oral cancer prevention. *J Periodontol*. 2018;89(5):540-548. doi:10.1002/JPER.17-0372
316. Petronis KR, Samuels JF, Moscicki EK, Anthony JC. An epidemiologic investigation of potential risk factors for suicide attempts. *Soc Psychiatry Psychiatr Epidemiol*. 1990;25(4):193-199. doi:10.1007/BF00782961
317. Sanders SA, Reece M, Herbenick D, Schick V, Dodge B, Fortenberry JD. Condom use during most recent vaginal intercourse event among a probability sample of adults in the United States. *Journal of Sexual Medicine*. 2010;7(SUPPL. 5):362-373. doi:10.1111/j.1743-6109.2010.02011.x
318. Taliaferro LA, McMorris BJ, Rider GN, Eisenberg ME. Risk and Protective Factors for Self-Harm in a Population-Based Sample of Transgender Youth. *Archives of Suicide Research*. 2019;23(2):203-221. doi:10.1080/13811118.2018.1430639
319. Terry-McElrath YM, O'Malley PM, Johnston LD. Alcohol and Marijuana Use Patterns Associated With Unsafe Driving Among U.S. High School Seniors: High Use Frequency, Concurrent Use, and Simultaneous Use. *J Stud Alcohol Drugs*. 2014;75(3):378-389. doi:10.15288/jsad.2014.75.378

320. Tucker JS, Wenzel SL, Golinelli D, et al. *Is Substance Use a Barrier to Protected Sex Among Homeless Women? Results From Between-and Within-Subjects Event Analyses**.; 2010.
321. Tucker JS, Ryan GW, Golinelli D, et al. Substance use and other risk factors for unprotected sex: Results from an event-based study of homeless youth. *AIDS Behav.* 2012;16(6):1699-1707. doi:10.1007/s10461-011-0017-9
322. Tucker JS, Wenzel SL, Golinelli D, Kennedy DP, Ewing B, Wertheimer S. Understanding heterosexual condom use among homeless men. *AIDS Behav.* 2013;17(5):1637-1644. doi:10.1007/s10461-012-0165-6
323. Walton MA, Cunningham RM, Goldstein AL, et al. Rates and Correlates of Violent Behaviors Among Adolescents Treated in an Urban Emergency Department. *Journal of Adolescent Health.* 2009;45(1):77-83. doi:10.1016/j.jadohealth.2008.12.005
324. Yan FA, Howard DE, Beck KH, Shattuck T, Hallmark-Kerr M. Psychosocial correlates of physical dating violence victimization among Latino early adolescents. *J Interpers Violence.* 2010;25(5):808-831. doi:10.1177/0886260509336958
325. Plevinsky JM, Maddux MH, Greenley RN. Substance Use in Adolescents and Young Adults with Inflammatory Bowel Diseases: An Exploratory Cluster Analysis. *J Pediatr Gastroenterol Nutr.* 2019;69(3):324-329. doi:10.1097/MPG.0000000000002365
326. Almog S, Aharon-Peretz J, Vulfsons S, et al. The pharmacokinetics, efficacy, and safety of a novel selective-dose cannabis inhaler in patients with chronic pain: A randomized, double-blinded, placebo-controlled trial. *European Journal of Pain (United Kingdom).* 2020;24(8):1505-1516. doi:10.1002/ejp.1605
327. Abrams DI, Hilton JF, Leiser RJ, et al. Short-Term Effects of Cannabinoids in Patients with HIV-1 Infection. *Ann Intern Med.* 2003;139(4):258. doi:10.7326/0003-4819-139-4-200308190-00008
328. Abrams DI, Jay CA, Shade SB, et al. Cannabis in painful HIV-associated sensory neuropathy: A randomized placebo-controlled trial. *Neurology.* 2007;68(7):515-521. doi:10.1212/01.wnl.0000253187.66183.9c
329. Carroll CB, Bain PO, Teare L, et al. Cannabis for dyskinesia in Parkinson disease: A randomized double-blind crossover study. *Neurology.* 2004;63(7):1245-1250. doi:10.1212/01.WNL.0000140288.48796.8E
330. Chang AE, Shiling DJ, Stillman RC, et al. *Delta-9-Tetrahydrocannabinol as an Antiemetic in Cancer Patients Receiving High-Dose Methotrexate A Prospective, Randomized Evaluation.* Vol 91.; 1979. <http://annals.org/pdfaccess.ashx?url=/data/journals/aim/19553/>
331. Shiling DJ, Stillman RC, Chang AE, et al. A prospective evaluation of delta-9-tetrahydrocannabinol as an antiemetic in patients receiving adriamycin and cytoxan chemotherapy. *Cancer.* 1981;47(7):1746-1751. doi:10.1002/1097-0142(19810401)47:7<1746::AID-CNCR2820470704>3.0.CO;2-4
332. Cooper ZD, Haney M. Sex-dependent effects of cannabis-induced analgesia. *Drug Alcohol Depend.* 2016;167:112-120. doi:10.1016/j.drugalcdep.2016.08.001
333. Corey-Bloom J, Wolfson T, Gamst A, et al. Smoked cannabis for spasticity in multiple sclerosis: A randomized, placebo-controlled trial. *CMAJ Canadian Medical Association Journal.* 2012;184(10):1143-1150. doi:10.1503/cmaj.110837

334. Ellis RJ, Toperoff W, Vaida F, et al. Smoked medicinal cannabis for neuropathic pain in HIV: A randomized, crossover clinical trial. *Neuropsychopharmacology*. 2009;34(3):672-680. doi:10.1038/npp.2008.120
335. Greenwald MK, Stitzer ML. Antinociceptive, subjective and behavioral effects of smoked marijuana in humans. *Drug Alcohol Depend*. 2000;59(3):261-275. doi:10.1016/S0376-8716(99)00128-3
336. Haroutounian S, Ratz Y, Ginosar Y, et al. The Effect of Medicinal Cannabis on Pain and Quality-of-Life Outcomes in Chronic Pain. *Clin J Pain*. 2016;32(12):1036-1043. doi:10.1097/AJP.0000000000000364
337. Isaac M, Isaac M, Holloway F. Is cannabis an anti-antipsychotic? The experience in psychiatric intensive care. *Hum Psychopharmacol*. 2005;20(3):207-210. doi:10.1002/hup.674
338. Kraft B, Frickey NA, Kaufmann RM, et al. Lack of Analgesia by Oral Standardized Cannabis Extract on Acute Inflammatory Pain and Hyperalgesia in Volunteers. *Anesthesiology*. 2008;109(1):101-110. doi:10.1097/ALN.0b013e31817881e1
339. Naftali T, Bar-Lev Schleider L, Dotan I, Lansky EP, Sklerovsky Benjaminov F, Konikoff FM. Cannabis induces a clinical response in patients with crohn's disease: A prospective placebo-controlled study. *Clinical Gastroenterology and Hepatology*. 2013;11(10). doi:10.1016/j.cgh.2013.04.034
340. Shelef A, Barak Y, Berger U, et al. Safety and Efficacy of Medical Cannabis Oil for Behavioral and Psychological Symptoms of Dementia: An-Open Label, Add-On, Pilot Study. *Journal of Alzheimer's Disease*. 2016;51(1):15-19. doi:10.3233/JAD-150915
341. Strasser F, Luftner D, Possinger K, et al. Comparison of orally administered cannabis extract and delta-9- tetrahydrocannabinol in treating patients with cancer-related anorexia-cachexia syndrome: A multicenter, phase III, randomized, double-blind, placebo-controlled clinical trial from the Cannabis-In-Cachexia-Study-Group. *Journal of Clinical Oncology*. 2006;24(21):3394-3400. doi:10.1200/JCO.2005.05.1847
342. Vaney C, Heinzl-Gutenbrunner M, Jobin P, et al. Efficacy, safety and tolerability of an orally administered cannabis extract in the treatment of spasticity in patients with multiple sclerosis: A randomized, double-blind, placebo-controlled, crossover study. *Multiple Sclerosis*. 2004;10(4):417-424. doi:10.1191/1352458504ms1048oa
343. Wade DT, Robson P, House H, Makela P, Aram J. A preliminary controlled study to determine whether whole-plant cannabis extracts can improve intractable neurogenic symptoms. *Clin Rehabil*. 2003;17(1):21-29. doi:10.1191/0269215503cr581oa
344. Wallace MS, Marcotte TD, Umlauf A, Gouaux B, Atkinson JH. Efficacy of Inhaled Cannabis on Painful Diabetic Neuropathy. *Journal of Pain*. 2015;16(7):616-627. doi:10.1016/j.jpain.2015.03.008
345. Ware MA, Wang T, Shapiro S, et al. Smoked cannabis for chronic neuropathic pain: A randomized controlled trial. *CMAJ Canadian Medical Association Journal*. 2010;182(14). doi:10.1503/cmaj.091414
346. Wilsey B, Marcotte T, Tsodikov A, et al. A Randomized, Placebo-Controlled, Crossover Trial of Cannabis Cigarettes in Neuropathic Pain. *Journal of Pain*. 2008;9(6):506-521. doi:10.1016/j.jpain.2007.12.010

347. Wilsey B, Marcotte T, Deutsch R, Gouaux B, Sakai S, Donaghe H. Low-dose vaporized cannabis significantly improves neuropathic pain. *Journal of Pain*. 2013;14(2):136-148. doi:10.1016/j.jpain.2012.10.009
348. Zajicek J, Fox P, Sanders H, et al. Cannabinoids for treatment of spasticity and other symptoms related to multiple sclerosis (CAMS study): Multicentre randomised placebo-controlled trial. *Lancet*. 2003;362(9395):1517-1526. doi:10.1016/S0140-6736(03)14738-1
349. Zajicek JP, Hobart JC, Slade A, Barnes D, Mattison PG. Multiple sclerosis and extract of cannabis: Results of the MUSEC trial. *J Neurol Neurosurg Psychiatry*. 2012;83(11):1125-1132. doi:10.1136/jnnp-2012-302468
350. Bergamaschi MM, Queiroz RHC, Chagas MHN, et al. Cannabidiol Reduces the Anxiety Induced by Simulated Public Speaking in Treatment-Naïve Social Phobia Patients. *Neuropsychopharmacology*. 2011;36(6):1219-1226. doi:10.1038/npp.2011.6
351. Boggs DL, Surti T, Gupta A, et al. The effects of cannabidiol (CBD) on cognition and symptoms in outpatients with chronic schizophrenia a randomized placebo controlled trial. *Psychopharmacology (Berl)*. 2018;235(7):1923-1932. doi:10.1007/s00213-018-4885-9
352. Crippa JAS, Nogueira Derenusson G, Borduqui Ferrari T, et al. Neural basis of anxiolytic effects of cannabidiol (CBD) in generalized social anxiety disorder: A preliminary report. *Journal of Psychopharmacology*. 2011;25(1):121-130. doi:10.1177/0269881110379283
353. Devinsky O, Cross JH, Laux L, et al. Trial of Cannabidiol for Drug-Resistant Seizures in the Dravet Syndrome. *New England Journal of Medicine*. 2017;376(21):2011-2020. doi:10.1056/nejmoa1611618
354. Devinsky O, Patel AD, Cross JH, et al. Effect of Cannabidiol on Drop Seizures in the Lennox–Gastaut Syndrome. *New England Journal of Medicine*. 2018;378(20):1888-1897. doi:10.1056/nejmoa1714631
355. Jazz Pharmaceuticals. Study to Evaluate the Effect of GWP42003 on Liver Fat Levels in Participants With Fatty Liver Disease. Published 2012. Accessed March 5, 2023. Study to Evaluate the Effect of GWP42003 on Liver Fat Levels in Participants With Fatty Liver Disease
356. VanLandingham KE, Crockett J, Taylor L, Morrison G. A Phase 2, Double-Blind, Placebo-Controlled Trial to Investigate Potential Drug-Drug Interactions Between Cannabidiol and Clobazam. *The Journal of Clinical Pharmacology*. 2020;60(10):1304-1313. doi:10.1002/jcph.1634
357. Hunter D, Oldfield G, Tich N, Messenheimer J, Sebree T. Synthetic transdermal cannabidiol for the treatment of knee pain due to osteoarthritis. *Osteoarthritis Cartilage*. 2018;26:S26. doi:10.1016/j.joca.2018.02.067
358. Irving PM, Iqbal T, Nwokolo C, et al. A Randomized, Double-blind, Placebo-controlled, Parallel-group, Pilot Study of Cannabidiol-rich Botanical Extract in the Symptomatic Treatment of Ulcerative Colitis. *Inflamm Bowel Dis*. 2018;24(4):714-724. doi:10.1093/ibd/izy002
359. Jadoon KA, Ratcliffe SH, Barrett DA, et al. Efficacy and safety of cannabidiol and tetrahydrocannabivarin on glycemic and lipid parameters in patients with type 2 diabetes: A randomized, double-blind, placebo-controlled, parallel group pilot study. *Diabetes Care*. 2016;39(10):1777-1786. doi:10.2337/dc16-0650

360. McGuire P, Robson P, Cubala WJ, et al. Cannabidiol (CBD) as an Adjunctive Therapy in Schizophrenia: A Multicenter Randomized Controlled Trial. *American Journal of Psychiatry*. 2018;175(3):225-231. doi:10.1176/appi.ajp.2017.17030325
361. Miller I, Scheffer IE, Gunning B, et al. Dose-Ranging Effect of Adjunctive Oral Cannabidiol vs Placebo on Convulsive Seizure Frequency in Dravet Syndrome: A Randomized Clinical Trial. In: *JAMA Neurology*. Vol 77. American Medical Association; 2020:613-621. doi:10.1001/jamaneurol.2020.0073
362. Naftali T, Mechulam R, Marii A, et al. Low-Dose Cannabidiol Is Safe but Not Effective in the Treatment for Crohn's Disease, a Randomized Controlled Trial. *Dig Dis Sci*. 2017;62(6):1615-1620. doi:10.1007/s10620-017-4540-z
363. Salim K, Schneider U, Burstein S, Hoy L, Karst M. Pain measurements and side effect profile of the novel cannabinoid ajulemic acid. *Neuropharmacology*. 2005;48(8 SPEC. ISS.):1164-1171. doi:10.1016/j.neuropharm.2005.02.010
364. Taylor L, Gidal B, Blakey G, Tayo B, Morrison G. A Phase I, Randomized, Double-Blind, Placebo-Controlled, Single Ascending Dose, Multiple Dose, and Food Effect Trial of the Safety, Tolerability and Pharmacokinetics of Highly Purified Cannabidiol in Healthy Subjects. *CNS Drugs*. 2018;32(11):1053-1067. doi:10.1007/s40263-018-0578-5
365. Thiele EA, Marsh ED, French JA, et al. Cannabidiol in patients with seizures associated with Lennox-Gastaut syndrome (GWPCARE4): a randomised, double-blind, placebo-controlled phase 3 trial. *The Lancet*. 2018;391(10125):1085-1096. doi:10.1016/S0140-6736(18)30136-3
366. Thiele EA, Bebin EM, Bhathal H, et al. Add-on Cannabidiol Treatment for Drug-Resistant Seizures in Tuberous Sclerosis Complex: A Placebo-Controlled Randomized Clinical Trial. *JAMA Neurol*. 2021;78(3):285-292. doi:10.1001/jamaneurol.2020.4607
367. Xu DH, Cullen BD, Tang M, Fang Y. The Effectiveness of Topical Cannabidiol Oil in Symptomatic Relief of Peripheral Neuropathy of the Lower Extremities. *Curr Pharm Biotechnol*. 2019;21(5):390-402. doi:10.2174/1389201020666191202111534
368. Karst M, Salim K, Burstein S, Conrad I, Hoy L, Schneider U. Analgesic Effect of the Synthetic Cannabinoid CT-3 on Chronic Neuropathic Pain. *JAMA*. 2003;290(13):1757. doi:10.1001/jama.290.13.1757
369. Rukwied R, Watkinson A, McGlone F, Dvorak M. Cannabinoid agonists attenuate capsaicin-induced responses in human skin. *Pain*. 2003;102(3):283-288. doi:10.1016/S0304-3959(02)00401-3
370. Hutcheon AW, Palmer JBD, Soukop M, et al. A randomised multicentre single blind comparison of a cannabinoid anti-emetic (Levonantradol) with chlorpromazine in patients receiving their first cytotoxic chemotherapy. *Eur J Cancer Clin Oncol*. 1983;19(8):1087-1090. doi:10.1016/0277-5379(83)90032-9
371. Heim Manfred E, Queiwer W, Altenburg HP. Randomized crossover study of the antiemetic activity of levonantradol and metoclopramide in cancer patients receiving chemotherapy. *Cancer Chemother Pharmacol*. 1984;13(2):123-125. doi:10.1007/BF00257128
372. SHEIDLER VR, ETTINGER DS, DIASIO RB, ENTERLINE JP, BROWN MD. Double-Blind Multiple-Dose Crossover Study of the Antiemetic Effect of Intramuscular Levonantradol Compared to Prochlorperazine. *The Journal of Clinical Pharmacology*. 1984;24(4):155-159. doi:10.1002/j.1552-4604.1984.tb01824.x

373. JAIN AK, RYAN JR, McMAHON FG, SMITH G. Evaluation of Intramuscular Levonantradol and Placebo in Acute Postoperative Pain. *The Journal of Clinical Pharmacology*. 1981;21(S1):320S-326S. doi:10.1002/j.1552-4604.1981.tb02610.x
374. Cobellis L, Castaldi MA, Giordano V, et al. Effectiveness of the association micronized N-Palmitoylethanolamine (PEA)-transpolydatin in the treatment of chronic pelvic pain related to endometriosis after laparoscopic assessment: A pilot study. *European Journal of Obstetrics and Gynecology and Reproductive Biology*. 2011;158(1):82-86. doi:10.1016/j.ejogrb.2011.04.011
375. Ahmedzai S, Carlyle DL, Calder IT, Moran F. Anti-emetic efficacy and toxicity of nabilone, a synthetic cannabinoid, in lung cancer chemotherapy. *Br J Cancer*. 1983;48(5):657-663. doi:10.1038/bjc.1983.247
376. Beaulieu P. Effects of nabilone, a synthetic cannabinoid, on postoperative pain. *Canadian Journal of Anesthesia/Journal canadien d'anesthésie*. 2006;53(8):769-775. doi:10.1007/BF03022793
377. Chan HSL, Correia JA, Macleod SM. *Study Design Nabilone Versus Prochlorperazine for Control of Cancer Chemotherapy-Induced Emesis in Children: A Double-Blind, Crossover Trial*. Vol 79.; 1987. <http://publications.aap.org/pediatrics/article-pdf/79/6/946/959624/946.pdf>
378. Crawford SM, Buckman R. Nabilone and metoclopramide in the treatment of nausea and vomiting due to cisplatin: A double blind study. *Med Oncol Tumor Pharmacother*. 1986;3(1):39. doi:10.1007/BF02934575
379. Dalzell AM, Bartlett H, Lilleyman JS. Nabilone: an alternative antiemetic for cancer chemotherapy. *Arch Dis Child*. 1986;61(5):502-505. doi:10.1136/ad.61.5.502
380. EINHORN LH, NAGY C, FURNAS B, WILLIAMS SD. Nabilone: An Effective Antiemetic in Patients Receiving Cancer Chemotherapy. *The Journal of Clinical Pharmacology*. 1981;21(1 S):64S-69S. doi:10.1002/j.1552-4604.1981.tb02576.x
381. FABRE LF, McLENDON D. The Efficacy and Safety of Nabilone (A Synthetic Cannabinoid) in the Treatment of Anxiety. *The Journal of Clinical Pharmacology*. 1981;21(S1):377S-382S. doi:10.1002/j.1552-4604.1981.tb02617.x
382. Frank B, Serpell MG, Hughes J, Matthews JNS, Kapur D. Comparison of analgesic effects and patient tolerability of nabilone and dihydrocodeine for chronic neuropathic pain: Randomised, crossover, double blind study. *BMJ*. 2008;336(7637):199-201. doi:10.1136/bmj.39429.619653.80
383. Fraser GA. The Use of a Synthetic Cannabinoid in the Management of Treatment-Resistant Nightmares in Posttraumatic Stress Disorder (PTSD). *CNS Neurosci Ther*. 2009;15(1):84-88. doi:10.1111/j.1755-5949.2008.00071.x
384. George M, Pejovic MH, Thuair M, Kramar A, Wolff JP. [Randomized comparative trial of a new anti-emetic: nabilone, in cancer patients treated with cisplatin]. *Biomed Pharmacother*. 1983;37(1):24-27. <http://www.ncbi.nlm.nih.gov/pubmed/6311306>
385. GLASS RM, UHLENHUTH EH, HARTEL FW, SCHUSTER CR, FISCHMAN MW. Single-Dose Study of Nabilone in Anxious Volunteers. *The Journal of Clinical Pharmacology*. 1981;21(S1):383S-396S. doi:10.1002/j.1552-4604.1981.tb02618.x

386. Herman TS, Einhorn LH, Jones SE, et al. Superiority of Nabilone over Prochlorperazine as an Antiemetic in Patients Receiving Cancer Chemotherapy. *New England Journal of Medicine*. 1979;300(23):1295-1297. doi:10.1056/NEJM197906073002302
387. Herrmann N, Ruthirakuhan M, Gallagher D, et al. Randomized Placebo-Controlled Trial of Nabilone for Agitation in Alzheimer's Disease. *The American Journal of Geriatric Psychiatry*. 2019;27(11):1161-1173. doi:10.1016/j.jagp.2019.05.002
388. Jetly R, Heber A, Fraser G, Boisvert D. The efficacy of nabilone, a synthetic cannabinoid, in the treatment of PTSD-associated nightmares: A preliminary randomized, double-blind, placebo-controlled cross-over design study. *Psychoneuroendocrinology*. 2015;51:585-588. doi:10.1016/j.psyneuen.2014.11.002
389. Johansson R, Kilkku P, Groenroos M. A double-blind, controlled trial of nabilone vs. prochlorperazine for refractory emesis induced by cancer chemotherapy. *Cancer Treat Rev*. 1982;9(9):25-33. doi:10.1016/S0305-7372(82)80032-7
390. Jones SE, Durant JR, Greco FA, Robertone A. *A Multi-Institutional Phase III Study of Nabilone vs. Placebo in Chemotherapy-Induced Nausea and Vomiting.*; 1982.
391. Kalliomäki J, Philipp A, Baxendale J, Annas P, Karlsten R, Segerdahl M. Lack of effect of central nervous system-active doses of nabilone on capsaicin-induced pain and hyperalgesia. *Clin Exp Pharmacol Physiol*. 2012;39(4):336-342. doi:10.1111/j.1440-1681.2012.05674.x
392. Levitt M. Nabilone vs. placebo in the treatment of chemotherapy-induced nausea and vomiting in cancer patients. *Cancer Treat Rev*. 1982;9(9):49-53. doi:10.1016/S0305-7372(82)80036-4
393. Niederle N, Schütte J, Schmidt CG. Crossover comparison of the antiemetic efficacy of nabilone and alizapride in patients with nonseminomatous testicular cancer receiving cisplatin therapy. *Klin Wochenschr*. 1986;64(8):362-365. doi:10.1007/BF01728184
394. Niiranen A, Mattson K. A cross-over comparison of nabilone and prochlorperazine for emesis induced by cancer chemotherapy. *Am J Clin Oncol*. 1985;8(4):336-340. doi:10.1097/00000421-198508000-00013
395. Niiranen A, Mattson K. Antiemetic Efficacy of Nabilone and Dexamethasone. *Am J Clin Oncol*. 1987;10(4):325-329. doi:10.1097/00000421-198708000-00014
396. Pini LA, Guerzoni S, Cainazzo MM, et al. Nabilone for the treatment of medication overuse headache: results of a preliminary double-blind, active-controlled, randomized trial. *J Headache Pain*. 2012;13(8):677-684. doi:10.1007/s10194-012-0490-1
397. Pinsger M, Schimetta W, Volc D, Hiermann E, Riederer F, Pölz W. Nutzen einer add-on-therapie mit dem synthetischen cannabinomimetikum nabilone bei patienten mit chronischen schmerzzuständen - Eine randomisierte kontrollierte studie. *Wien Klin Wochenschr*. 2006;118(11-12):327-335. doi:10.1007/s00508-006-0611-4
398. Pomeroy M, Fennelly James J, Towers M. Prospective randomized double-blind trial of nabilone versus domperidone in the treatment of cytotoxic-induced emesis. *Cancer Chemother Pharmacol*. 1986;17(3):285-288. doi:10.1007/BF00256701
399. Pooyania S, Ethans K, Szturm T, Casey A, Perry D. A Randomized, Double-Blinded, Crossover Pilot Study Assessing the Effect of Nabilone on Spasticity in Persons With Spinal Cord Injury. *Arch Phys Med Rehabil*. 2010;91(5):703-707. doi:10.1016/j.apmr.2009.12.025

400. John Redmond W, Goffaux P, Potvin S, Marchand S. Analgesic and antihyperalgesic effects of nabilone on experimental heat pain. *Curr Med Res Opin.* 2008;24(4):1017-1024. doi:10.1185/030079908X280635
401. Skrabek RQ, Galimova L, Ethans K, Perry D. Nabilone for the Treatment of Pain in Fibromyalgia. *J Pain.* 2008;9(2):164-173. doi:10.1016/j.jpain.2007.09.002
402. Steele N, Gralla RJ, Braun DW, Young CW. Double-blind comparison of the antiemetic effects of nabilone and prochlorperazine on chemotherapy-induced emesis. *Cancer Treat Rep.* 1980;64(2-3):219-224. <http://www.ncbi.nlm.nih.gov/pubmed/6250699>
403. Toth C, Mawani S, Brady S, et al. An enriched-enrolment, randomized withdrawal, flexible-dose, double-blind, placebo-controlled, parallel assignment efficacy study of nabilone as adjuvant in the treatment of diabetic peripheral neuropathic pain. *Pain.* 2012;153(10):2073-2082. doi:10.1016/j.pain.2012.06.024
404. Turcotte D, Doupe M, Torabi M, et al. Nabilone as an Adjunctive to Gabapentin for Multiple Sclerosis-Induced Neuropathic Pain: A Randomized Controlled Trial. *Pain Medicine.* 2015;16(1):149-159. doi:10.1111/pme.12569
405. Wada JK, Bogdon DL, Gunnell JC, Hum GJ, Gota CH, Rieth TE. Double-blind, randomized, crossover trial of nabilone vs. placebo in cancer chemotherapy. *Cancer Treat Rev.* 1982;9(9):39-44. doi:10.1016/S0305-7372(82)80034-0
406. Wissel J, Haydn T, Müller J, et al. Low dose treatment with the synthetic cannabinoid Nabilone significantly reduces spasticity-related pain: A double-blind placebo-controlled cross-over trial. *J Neurol.* 2006;253(10):1337-1341. doi:10.1007/s00415-006-0218-8
407. Blake DR, Robson P, Ho M, Jubb RW, McCabe CS. Preliminary assessment of the efficacy, tolerability and safety of a cannabis-based medicine (Sativex) in the treatment of pain caused by rheumatoid arthritis. *Rheumatology.* 2006;45(1):50-52. doi:10.1093/rheumatology/kei183
408. Collin C, Davies P, Mutiboko IK, Ratcliffe S. Randomized controlled trial of cannabis-based medicine in spasticity caused by multiple sclerosis. *Eur J Neurol.* 2007;14(3):290-296. doi:10.1111/j.1468-1331.2006.01639.x
409. Collin C, Ehler E, Waberszinek G, et al. A double-blind, randomized, placebo-controlled, parallel-group study of Sativex, in subjects with symptoms of spasticity due to multiple sclerosis. *Neurol Res.* 2010;32(5):451-459. doi:10.1179/016164109X12590518685660
410. Conte A, Bettolo CM, Onesti E, et al. Cannabinoid-induced effects on the nociceptive system: A neurophysiological study in patients with secondary progressive multiple sclerosis. *European Journal of Pain.* 2009;13(5):472-477. doi:10.1016/j.ejpain.2008.05.014
411. Duran M, Pérez E, Abanades S, et al. Preliminary efficacy and safety of an oromucosal standardized cannabis extract in chemotherapy-induced nausea and vomiting. *Br J Clin Pharmacol.* 2010;70(5):656-663. doi:10.1111/j.1365-2125.2010.03743.x
412. Fallon MT, Albert Lux E, McQuade R, et al. Sativex oromucosal spray as adjunctive therapy in advanced cancer patients with chronic pain unalleviated by optimized opioid therapy: two double-blind, randomized, placebo-controlled phase 3 studies. *Br J Pain.* 2017;11(3):119-133. doi:10.1177/2049463717710042
413. Lichtman AH, Lux EA, McQuade R, et al. Results of a Double-Blind, Randomized, Placebo-Controlled Study of Nabiximols Oromucosal Spray as an Adjunctive Therapy in Advanced Cancer Patients with Chronic Uncontrolled Pain. *J Pain Symptom Manage.* 2018;55(2):179-188.e1. doi:10.1016/j.jpainsymman.2017.09.001

414. Lynch ME, Cesar-Rittenberg P, Hohmann AG. A Double-Blind, Placebo-Controlled, Crossover Pilot Trial With Extension Using an Oral Mucosal Cannabinoid Extract for Treatment of Chemotherapy-Induced Neuropathic Pain. *J Pain Symptom Manage*. 2014;47(1):166-173. doi:10.1016/j.jpainsymman.2013.02.018
415. López-Sendón Moreno JL, García Caldentey J, Trigo Cubillo P, et al. A double-blind, randomized, cross-over, placebo-controlled, pilot trial with Sativex in Huntington's disease. *J Neurol*. 2016;263(7):1390-1400. doi:10.1007/s00415-016-8145-9
416. Novotna A, Mares J, Ratcliffe S, et al. A randomized, double-blind, placebo-controlled, parallel-group, enriched-design study of nabiximols* (Sativex[®]), as add-on therapy, in subjects with refractory spasticity caused by multiple sclerosis. *Eur J Neurol*. 2011;18(9):1122-1131. doi:10.1111/j.1468-1331.2010.03328.x
417. Nurmikko TJ, Serpell MG, Hoggart B, Toomey PJ, Morlion BJ, Haines D. Sativex successfully treats neuropathic pain characterised by allodynia: A randomised, double-blind, placebo-controlled clinical trial. *Pain*. 2007;133(1-3):210-220. doi:10.1016/j.pain.2007.08.028
418. Portenoy RK, Ganae-Motan ED, Allende S, et al. Nabiximols for Opioid-Treated Cancer Patients With Poorly-Controlled Chronic Pain: A Randomized, Placebo-Controlled, Graded-Dose Trial. *J Pain*. 2012;13(5):438-449. doi:10.1016/j.jpain.2012.01.003
419. Serpell MG, Notcutt W, Collin C. Sativex long-term use: An open-label trial in patients with spasticity due to multiple sclerosis. *J Neurol*. 2013;260(1):285-295. doi:10.1007/s00415-012-6634-z
420. Serpell M, Ratcliffe S, Hovorka J, et al. A double-blind, randomized, placebo-controlled, parallel group study of THC/CBD spray in peripheral neuropathic pain treatment. *European Journal of Pain*. 2014;18(7):999-1012. doi:10.1002/j.1532-2149.2013.00445.x
421. Aragona M, Onesti E, Tomassini V, et al. Psychopathological and cognitive effects of therapeutic cannabinoids in multiple sclerosis: A double-blind, placebo controlled, crossover study. *Clin Neuropharmacol*. 2009;32(1):41-47. doi:10.1097/WNF.0b013e3181633497
422. Berman JS, Symonds C, Birch R. Efficacy of two cannabis based medicinal extracts for relief of central neuropathic pain from brachial plexus avulsion: Results of a randomised controlled trial. *Pain*. 2004;112(3):299-306. doi:10.1016/j.pain.2004.09.013
423. Cooper RE, Williams E, Seegobin S, Tye C, Kuntsi J, Asherson P. Cannabinoids in attention-deficit/hyperactivity disorder: A randomised-controlled trial. *European Neuropsychopharmacology*. 2017;27(8):795-808. doi:10.1016/j.euroneuro.2017.05.005
424. Johnson JR, Burnell-Nugent M, Lossignol D, Ganae-Motan ED, Potts R, Fallon MT. Multicenter, Double-Blind, Randomized, Placebo-Controlled, Parallel-Group Study of the Efficacy, Safety, and Tolerability of THC:CBD Extract and THC Extract in Patients with Intractable Cancer-Related Pain. *J Pain Symptom Manage*. 2010;39(2):167-179. doi:10.1016/j.jpainsymman.2009.06.008
425. Kavia RBC, de Ridder D, Constantinescu CS, Stott CG, Fowler CJ. Randomized controlled trial of Sativex to treat detrusor overactivity in multiple sclerosis. *Multiple Sclerosis*. 2010;16(11):1349-1359. doi:10.1177/1352458510378020
426. Leocani L, Nuara A, Houdayer E, et al. Sativex[®] and clinical–neurophysiological measures of spasticity in progressive multiple sclerosis. *J Neurol*. 2015;262(11):2520-2527. doi:10.1007/s00415-015-7878-1

427. Markovà J, Essner U, Akmaz B, et al. Sativex[®] as add-on therapy vs. further optimized first-line ANTispastics (SAVANT) in resistant multiple sclerosis spasticity: a double-blind, placebo-controlled randomised clinical trial. *International Journal of Neuroscience*. 2019;129(2):119-128. doi:10.1080/00207454.2018.1481066
428. Rog DJ, Nurmikko TJ, Friede T, Young CA. Randomized, controlled trial of cannabis-based medicine in central pain in multiple sclerosis. *Neurology*. 2005;65(6):812-819. doi:10.1212/01.wnl.0000176753.45410.8b
429. Selvarajah D, Gandhi R, Emery CJ, Tesfaye S. Randomized Placebo-Controlled Double-Blind Clinical Trial of Cannabis-Based Medicinal Product (Sativex) in Painful Diabetic Neuropathy. *Diabetes Care*. 2010;33(1):128-130. doi:10.2337/dc09-1029
430. Tomassini V, Onesti E, Tinelli E, et al. Assessing the Neurophysiological Effects of Cannabinoids on Spasticity in Multiple Sclerosis. *J Neurosci Rehabil*. 2014;1(2). doi:10.17653/2374-9091.ss0005
431. Vachová M, Novotná A, Mares J. A Multicentre, Double-Blind, Randomised, Parallel-Group, Placebo-Controlled Study of Effect of Long-Term Sativex[®] Treatment on Cognition and Mood of Patients with Spasticity Due to Multiple Sclerosis. *J Mult Scler (Foster City)*. 2013;01(02). doi:10.4172/jmso.1000122
432. Wade DT, Makela P, Robson P, House H, Bateman C. Do cannabis-based medicinal extracts have general or specific effects on symptoms in multiple sclerosis? A double-blind, randomized, placebo-controlled study on 160 patients. *Multiple Sclerosis*. 2004;10(4):434-441. doi:10.1191/1352458504ms1082oa
433. Staquet M, Gantt C, Machin D. Effect of a nitrogen analog of tetrahydrocannabinol on cancer pain. *Clin Pharmacol Ther*. 1978;23(4):397-401. doi:10.1002/cpt1978234397
434. Andresen SR, Bing J, Hansen RM, et al. Ultramicronized palmitoylethanolamide in spinal cord injury neuropathic pain: A randomized, double-blind, placebo-controlled trial. *Pain*. 2016;157(9):2097-2103. doi:10.1097/j.pain.0000000000000623
435. Huggins JP, Smart TS, Langman S, Taylor L, Young T. An efficient randomised, placebo-controlled clinical trial with the irreversible fatty acid amide hydrolase-1 inhibitor PF-04457845, which modulates endocannabinoids but fails to induce effective analgesia in patients with pain due to osteoarthritis of the knee. *Pain*. 2012;153(9):1837-1846. doi:10.1016/j.pain.2012.04.020
436. Liem-Moolenaar M, Beek ETT, Kam MLD, et al. Central nervous system effects of haloperidol on THC in healthy male volunteers. *Journal of Psychopharmacology*. 2010;24(11):1697-1708. doi:10.1177/0269881109358200
437. Wallace M, Schulteis G, Atkinson JH, et al. Dose-dependent Effects of Smoked Cannabis on Capsaicin-induced Pain and Hyperalgesia in Healthy Volunteers. *Anesthesiology*. 2007;107(5):785-796. doi:10.1097/01.anes.0000286986.92475.b7
438. Germini F, Coerezza A, Andreinetti L, et al. N-of-1 Randomized Trials of Ultra-Micronized Palmitoylethanolamide in Older Patients with Chronic Pain. *Drugs Aging*. 2017;34(12):941-952. doi:10.1007/s40266-017-0506-2
439. Karniol IG, Carlini EA. Comparative Studies in Man and in Laboratory Animals on Δ^8 - and Δ^9 -trans-Tetrahydrocannabinol. *Pharmacology*. 1973;9(2):115-126. doi:10.1159/000136375

440. Ahmed AIA, van den Elsen GAH, Colbers A, et al. Safety and pharmacokinetics of oral delta-9-tetrahydrocannabinol in healthy older subjects: A randomized controlled trial. *European Neuropsychopharmacology*. 2014;24(9):1475-1482. doi:10.1016/j.euroneuro.2014.06.007
441. Ball S, Vickery J, Hobart J, et al. The Cannabinoid Use in Progressive Inflammatory brain Disease (CUPID) trial: A randomised double-blind placebo-controlled parallel-group multicentre trial and economic evaluation of cannabinoids to slow progression in multiple sclerosis. *Health Technol Assess (Rockv)*. 2015;19(12):1-187. doi:10.3310/hta19120
442. Barkus E, Morrison PD, Vuletic D, et al. Does intravenous Δ 9-tetrahydrocannabinol increase dopamine release? A SPET study. *Journal of Psychopharmacology*. 2011;25(11):1462-1468. doi:10.1177/0269881110382465
443. Beal JE, Olson R, Laubenstein L, et al. Dronabinol as a treatment for anorexia associated with weight loss in patients with AIDS. *J Pain Symptom Manage*. 1995;10(2):89-97. doi:10.1016/0885-3924(94)00117-4
444. Beaumont H, Jensen J, Carlsson A, Ruth M, Lehmann A, Boeckxstaens GE. Effect of Δ 9-tetrahydrocannabinol, a cannabinoid receptor agonist, on the triggering of transient lower oesophageal sphincter relaxations in dogs and humans. *Br J Pharmacol*. 2009;156(1):153-162. doi:10.1111/j.1476-5381.2008.00010.x
445. Bhattacharyya S, Fusar-Poli P, Borgwardt S, et al. Modulation of Mediotemporal and Ventrostriatal Function in Humans by Δ 9-Tetrahydrocannabinol. *Arch Gen Psychiatry*. 2009;66(4):442. doi:10.1001/archgenpsychiatry.2009.17
446. Bhattacharyya S, Atakan Z, Martin-Santos R, et al. Impairment of inhibitory control processing related to acute psychotomimetic effects of cannabis. *European Neuropsychopharmacology*. 2015;25(1):26-37. doi:10.1016/j.euroneuro.2014.11.018
447. Bossong MG, van Berckel BNM, Boellaard R, et al. Δ 9-tetrahydrocannabinol induces dopamine release in the human striatum. *Neuropsychopharmacology*. 2009;34(3):759-766. doi:10.1038/npp.2008.138
448. Brisbois TD, de Kock IH, Watanabe SM, et al. Delta-9-tetrahydrocannabinol may palliate altered chemosensory perception in cancer patients: results of a randomized, double-blind, placebo-controlled pilot trial. *Annals of Oncology*. 2011;22(9):2086-2093. doi:10.1093/annonc/mdq727
449. Buggy DJ, Toogood L, Maric S, Sharpe P, Lambert DG, Rowbotham DJ. Lack of analgesic efficacy of oral δ -9-tetrahydrocannabinol in postoperative pain. *Pain*. 2003;106(1-2):169-172. doi:10.1016/S0304-3959(03)00331-2
450. Cooper ZD, Comer SD, Haney M. Comparison of the analgesic effects of dronabinol and smoked marijuana in daily marijuana smokers. *Neuropsychopharmacology*. 2013;38(10):1984-1992. doi:10.1038/npp.2013.97
451. D'Souza DC, Perry E, MacDougall L, et al. The psychotomimetic effects of intravenous delta-9-tetrahydrocannabinol in healthy individuals: Implications for psychosis. *Neuropsychopharmacology*. 2004;29(8):1558-1572. doi:10.1038/sj.npp.1300496
452. D'Souza DC, Ranganathan M, Braley G, et al. Blunted psychotomimetic and amnestic effects of Δ -9- tetrahydrocannabinol in frequent users of cannabis. *Neuropsychopharmacology*. 2008;33(10):2505-2516. doi:10.1038/sj.npp.1301643

453. D'Souza DC, Pittman B, Perry E, Simen A. Preliminary evidence of cannabinoid effects on brain-derived neurotrophic factor (BDNF) levels in humans. *Psychopharmacology (Berl)*. 2009;202(4):569-578. doi:10.1007/s00213-008-1333-2
454. D'Souza DC, Fridberg DJ, Skosnik PD, et al. Dose-related modulation of event-related potentials to novel and target stimuli by intravenous δ 9-THC in humans. *Neuropsychopharmacology*. 2012;37(7):1632-1646. doi:10.1038/npp.2012.8
455. de Vries M, van Rijckevorsel DCM, Vissers KCP, Wilder-Smith OHG, van Goor H. Single dose delta-9-tetrahydrocannabinol in chronic pancreatitis patients: Analgesic efficacy, pharmacokinetics and tolerability. *Br J Clin Pharmacol*. 2016;81(3):525-537. doi:10.1111/bcp.12811
456. de Vries M, van Rijckevorsel DCM, Vissers KCP, Wilder-Smith OHG, van Goor H. Tetrahydrocannabinol Does Not Reduce Pain in Patients With Chronic Abdominal Pain in a Phase 2 Placebo-controlled Study. *Clinical Gastroenterology and Hepatology*. 2017;15(7):1079-1086.e4. doi:10.1016/j.cgh.2016.09.147
457. esfandyari t., camilleri m., ferber i., burton d., baxter k., zinsmeister a. r. Effect of a cannabinoid agonist on gastrointestinal transit and postprandial satiation in healthy human subjects: a randomized, placebo-controlled study. *Neurogastroenterology and Motility*. 2006;18(9):831-838. doi:10.1111/j.1365-2982.2006.00834.x
458. FRYTAK S. Delta-9-Tetrahydrocannabinol as an Antiemetic for Patients Receiving Cancer Chemotherapy. *Ann Intern Med*. 1979;91(6):825. doi:10.7326/0003-4819-91-6-825
459. Gralla RJ, Tyson LB, Bordin LA, et al. Antiemetic therapy: a review of recent studies and a report of a random assignment trial comparing metoclopramide with delta-9-tetrahydrocannabinol. *Cancer Treat Rep*. 1984;68(1):163-172. <http://www.ncbi.nlm.nih.gov/pubmed/6318993>
460. Haney M. Opioid antagonism of cannabinoid effects: Differences between marijuana smokers and nonmarijuana smokers. *Neuropsychopharmacology*. 2007;32(6):1391-1403. doi:10.1038/sj.npp.1301243
461. Issa MA, Narang S, Jamison RN, et al. The Subjective Psychoactive Effects of Oral Dronabinol Studied in a Randomized, Controlled Crossover Clinical Trial for Pain. *Clin J Pain*. 2014;30(6):472-478. doi:10.1097/AJP.0000000000000022
462. Karniol IG, Shirakawa I, Takahashi RN, Knobel E, Musty RE. Effects of Δ 9-Tetrahydrocannabinol and Cannabinol in Man. *Pharmacology*. 1975;13(6):502-512. doi:10.1159/000136944
463. Killestein J, Hoogervorst ELJ, Reif M, et al. Safety, tolerability, and efficacy of orally administered cannabinoids in MS. *Neurology*. 2002;58(9):1404-1407. doi:10.1212/WNL.58.9.1404
464. Killestein J, Hoogervorst ELJ, Reif M, et al. Safety, tolerability, and efficacy of orally administered cannabinoids in MS. *Neurology*. 2002;58(9):1404-1407. doi:10.1212/WNL.58.9.1404
465. Kleinloog D, Liem-Moolenaar M, Jacobs G, et al. Does olanzapine inhibit the psychomimetic effects of δ 9- tetrahydrocannabinol? *Journal of Psychopharmacology*. 2012;26(10):1307-1316. doi:10.1177/0269881112446534

466. Klooker TK, Leliefeld KEM, van den Wijngaard RM, Boeckstaens GEE. The cannabinoid receptor agonist delta-9-tetrahydrocannabinol does not affect visceral sensitivity to rectal distension in healthy volunteers and IBS patients. *Neurogastroenterology and Motility*. 2011;23(1):30. doi:10.1111/j.1365-2982.2010.01587.x
467. Lane M, Vogel CL, Ferguson J, et al. Dronabinol and prochlorperazine in combination for treatment of cancer chemotherapy-induced nausea and vomiting. *J Pain Symptom Manage*. 1991;6(6):352-359. doi:10.1016/0885-3924(91)90026-Z
468. Langford RM, Mares J, Novotna A, et al. A double-blind, randomized, placebo-controlled, parallel-group study of THC/CBD oromucosal spray in combination with the existing treatment regimen, in the relief of central neuropathic pain in patients with multiple sclerosis. *J Neurol*. 2013;260(4):984-997. doi:10.1007/s00415-012-6739-4
469. Lee MC, Ploner M, Wiech K, et al. Amygdala activity contributes to the dissociative effect of cannabis on pain perception. *Pain*. 2013;154(1):124-134. doi:10.1016/j.pain.2012.09.017
470. Levin FR, Mariani JJ, Brooks DJ, Pavlicova M, Cheng W, Nunes E v. Dronabinol for the treatment of cannabis dependence: A randomized, double-blind, placebo-controlled trial. *Drug Alcohol Depend*. 2011;116(1-3):142-150. doi:10.1016/j.drugalcdep.2010.12.010
471. Levin FR, Mariani JJ, Pavlicova M, et al. Dronabinol and lofexidine for cannabis use disorder: A randomized, double-blind, placebo-controlled trial. *Drug Alcohol Depend*. 2016;159:53-60. doi:10.1016/j.drugalcdep.2015.11.025
472. Libman E, Stern MH. The effects of Δ^9 THC on cutaneous sensitivity and its relation to personality. *Pers Individ Dif*. 1985;6(2):169-174. doi:10.1016/0191-8869(85)90106-0
473. Malik Z, Bayman L, Valestin J, Rizvi-Toner A, Hashmi S, Schey R. Dronabinol increases pain threshold in patients with functional chest pain: A pilot double-blind placebo-controlled trial. *Diseases of the Esophagus*. 2017;30(2). doi:10.1111/dote.12455
474. McCabe M, Smith Frederick P, Macdonald John S, Woolley Paul V, Goldberg D, Schein Philip S. Efficacy of tetrahydrocannabinol in patients refractory to standard antiemetic therapy. *Invest New Drugs*. 1988;6(3). doi:10.1007/BF00175407
475. Morgan CJA, Freeman TP, Hindocha C, Schafer G, Gardner C, Curran HV. Individual and combined effects of acute delta-9-tetrahydrocannabinol and cannabidiol on psychotomimetic symptoms and memory function. *Transl Psychiatry*. 2018;8(1). doi:10.1038/s41398-018-0191-x
476. Müller-Vahl KR, Koblenz A, Jöbges M, Kolbe H, Emrich HM, Schneider U. Influence of Treatment of Tourette Syndrome with Δ^9 -Tetrahydrocannabinol (Δ^9 -THC) on Neuropsychological Performance. *Pharmacopsychiatry*. 2001;34(1):19-24. doi:10.1055/s-2001-15191
477. Müller-Vahl KR, Prevedel H, Theloe K, Kolbe H, Emrich HM, Schneider U. Treatment of tourette syndrome with delta-9-tetrahydrocannabinol (Δ^9 -THC): No influence on neuropsychological performance. *Neuropsychopharmacology*. 2003;28(2):384-388. doi:10.1038/sj.npp.1300047
478. Naef M, Curatolo M, Petersen-Felix S, Arendt-Nielsen L, Zbinden A, Brenneisen R. The analgesic effect of oral delta-9-tetrahydrocannabinol (THC), morphine, and a THC-morphine combination in healthy subjects under experimental pain conditions. *Pain*. 2003;105(1-2):79-88. doi:10.1016/S0304-3959(03)00163-5

479. Narang S, Gibson D, Wasan AD, et al. Efficacy of Dronabinol as an Adjuvant Treatment for Chronic Pain Patients on Opioid Therapy. *J Pain*. 2008;9(3):254-264. doi:10.1016/j.jpain.2007.10.018
480. NEIDHART JA, GAGEN MM, WILSON HE, YOUNG DC. Comparative Trial of the Antiemetic Effects of THC and Haloperidol. *The Journal of Clinical Pharmacology*. 1981;21(1 S):38S-42S. doi:10.1002/j.1552-4604.1981.tb02571.x
481. NOYES R, BRUNK SF, BARAM DA, CANTER A. Analgesic Effect of Delta-9-Tetrahydrocannabinol. *The Journal of Clinical Pharmacology*. 1975;15(2-3):139-143. doi:10.1002/j.1552-4604.1975.tb02348.x
482. Noyes R, Brunk SF, Avery DH, Canter A. The analgesic properties of delta-9-tetrahydrocannabinol and codeine. *Clin Pharmacol Ther*. 1975;18(1):84-89. doi:10.1002/cpt197518184
483. ORR LE, MCKERNAN JF. Antiemetic Effect of Δ^9 -Tetrahydrocannabinol in Chemotherapy-Associated Nausea and Emesis As Compared to Placebo and Compazine. *The Journal of Clinical Pharmacology*. 1981;21(S1):76S-80S. doi:10.1002/j.1552-4604.1981.tb02578.x
484. PETRO DJ, ELLENBERGER C. Treatment of Human Spasticity with Δ^9 -Tetrahydrocannabinol. *The Journal of Clinical Pharmacology*. 1981;21(S1):413S-416S. doi:10.1002/j.1552-4604.1981.tb02621.x
485. Radhakrishnan R, Skosnik PD, Cortes-Briones J, et al. GABA deficits enhance the psychotomimetic effects of Δ^9 -THC. *Neuropsychopharmacology*. 2015;40(8):2047-2056. doi:10.1038/npp.2015.58
486. Rintala DH, Fiess RN, Tan G, Holmes SA, Bruel BM. Effect of Dronabinol on Central Neuropathic Pain After Spinal Cord Injury. *Am J Phys Med Rehabil*. 2010;89(10):840-848. doi:10.1097/PHM.0b013e3181f1c4ec
487. Roberts JD, Gennings C, Shih M. Synergistic affective analgesic interaction between delta-9- tetrahydrocannabinol and morphine. *Eur J Pharmacol*. 2006;530(1-2):54-58. doi:10.1016/j.ejphar.2005.11.036
488. Roitman P, Mechoulam R, Cooper-Kazaz R, Shalev A. Preliminary, Open-Label, Pilot Study of Add-On Oral Δ^9 -Tetrahydrocannabinol in Chronic Post-Traumatic Stress Disorder. *Clin Drug Investig*. 2014;34(8):587-591. doi:10.1007/s40261-014-0212-3
489. Sallan SE, Zinberg NE, Frei E. Antiemetic Effect of Delta-9-Tetrahydrocannabinol in Patients Receiving Cancer Chemotherapy. *New England Journal of Medicine*. 1975;293(16):795-797. doi:10.1056/NEJM197510162931603
490. Sallan SE, Cronin C, Zelen M, Zinberg NE. Antiemetics in Patients Receiving Chemotherapy for Cancer. *New England Journal of Medicine*. 1980;302(3):135-138. doi:10.1056/NEJM198001173020302
491. Schimrigk S, Marziniak M, Neubauer C, Kugler EM, Werner G, Abramov-Sommariva D. Dronabinol Is a Safe Long-Term Treatment Option for Neuropathic Pain Patients. *Eur Neurol*. 2017;78(5-6):320-329. doi:10.1159/000481089

492. Schlienz NJ, Lee DC, Stitzer ML, Vandrey R. The effect of high-dose dronabinol (oral THC) maintenance on cannabis self-administration. *Drug Alcohol Depend.* 2018;187:254-260. doi:10.1016/j.drugalcdep.2018.02.022
493. Seeling W, Kneer L, Büchele B, et al. Keine synergistische wirkung der kombination von Δ 9-tetrahydrocannabinol und piritramid bei postoperativen schmerzen. *Anaesthesist.* 2006;55(4):391-400. doi:10.1007/s00101-005-0963-6
494. Svendsen KB, Jensen TS, Bach FW. Does the cannabinoid dronabinol reduce central pain in multiple sclerosis? Randomised double blind placebo controlled crossover trial. *BMJ.* 2004;329(7460):253. doi:10.1136/bmj.38149.566979.AE
495. Thomas J, Andrysiak T, Fairbanks L, Goodnight J, Sarna G, Jamison K. Cannabis and cancer chemotherapy. A comparison of oral delta-9-thc and prochlorperazine. *Cancer.* 1982;50(4):636-645. doi:10.1002/1097-0142(19820815)50:4<636::AID-CNCR2820500404>3.0.CO;2-4
496. TIMPONE JG, WRIGHT DJ, LI N, et al. The Safety and Pharmacokinetics of Single-Agent and Combination Therapy with Megestrol Acetate and Dronabinol for the Treatment of HIV Wasting Syndrome. *AIDS Res Hum Retroviruses.* 1997;13(4):305-315. doi:10.1089/aid.1997.13.305
497. Tomida I, Azuara-Blanco A, House H, Flint M, Pertwee RG, Robson PJ. Effect of Sublingual Application of Cannabinoids on Intraocular Pressure: A Pilot Study. *J Glaucoma.* 2006;15(5):349-353. doi:10.1097/01.ijg.0000212260.04488.60
498. van Amerongen G, Kanhai K, Baakman AC, et al. Effects on Spasticity and Neuropathic Pain of an Oral Formulation of Δ 9-tetrahydrocannabinol in Patients With Progressive Multiple Sclerosis. *Clin Ther.* 2018;40(9):1467-1482. doi:10.1016/j.clinthera.2017.01.016
499. van Amerongen G, Kanhai K, Baakman AC, et al. Effects on Spasticity and Neuropathic Pain of an Oral Formulation of Δ 9-tetrahydrocannabinol in Patients With Progressive Multiple Sclerosis. *Clin Ther.* 2018;40(9):1467-1482. doi:10.1016/j.clinthera.2017.01.016
500. van den Elsen GAH, Ahmed AIA, Verkes RJ, et al. Tetrahydrocannabinol for neuropsychiatric symptoms in dementia: A randomized controlled trial. *Neurology.* 2015;84(23):2338-2346. doi:10.1212/WNL.0000000000001675
501. van den Elsen GAH, Ahmed AIA, Verkes RJ, Feuth T, van der Marck MA, Olde Rikkert MGM. Tetrahydrocannabinol in Behavioral Disturbances in Dementia: A Crossover Randomized Controlled Trial. *The American Journal of Geriatric Psychiatry.* 2015;23(12):1214-1224. doi:10.1016/j.jagp.2015.07.011
502. Vandrey R, Stitzer ML, Mintzer MZ, Huestis MA, Murray JA, Lee D. The dose effects of short-term dronabinol (oral THC) maintenance in daily cannabis users. *Drug Alcohol Depend.* 2013;128(1-2):64-70. doi:10.1016/j.drugalcdep.2012.08.001
503. Volicer L, Stelly M, Morris J, McLaughlin J, Volicer BJ. Effects of dronabinol on anorexia and disturbed behavior in patients with Alzheimer's disease. *Int J Geriatr Psychiatry.* 1997;12(9):913-919. doi:10.1002/(SICI)1099-1166(199709)12:9<913::AID-GPS663>3.0.CO;2-D
504. Walter C, Oertel BG, Felden L, et al. Brain mapping-based model of Δ 9-tetrahydrocannabinol effects on connectivity in the pain matrix. *Neuropsychopharmacology.* 2016;41(6):1659-1669. doi:10.1038/npp.2015.336

505. Walther S, Mahlberg R, Eichmann U, Kunz D. Delta-9-tetrahydrocannabinol for nighttime agitation in severe dementia. *Psychopharmacology (Berl)*. 2006;185(4):524-528. doi:10.1007/s00213-006-0343-1
506. Wilsey B, Marcotte TD, Deutsch R, Zhao H, Prasad H, Phan A. An Exploratory Human Laboratory Experiment Evaluating Vaporized Cannabis in the Treatment of Neuropathic Pain From Spinal Cord Injury and Disease. *Journal of Pain*. 2016;17(9):982-1000. doi:10.1016/j.jpain.2016.05.010
507. Wong BS, Camilleri M, Eckert D, et al. Randomized pharmacodynamic and pharmacogenetic trial of dronabinol effects on colon transit in irritable bowel syndrome-diarrhea. *Neurogastroenterology & Motility*. 2012;24(4):358-e169. doi:10.1111/j.1365-2982.2011.01874.x
508. Zadikoff C, Wadia PM, Miyasaki J, et al. Cannabinoid, CB1 agonists in cervical dystonia: Failure in a phase IIa randomized controlled trial. *Basal Ganglia*. 2011;1(2):91-95. doi:10.1016/j.baga.2011.04.002
509. Zajicek JP, Sanders HP, Wright DE, et al. Cannabinoids in multiple sclerosis (CAMS) study: Safety and efficacy data for 12 months follow up. *J Neurol Neurosurg Psychiatry*. 2005;76(12):1664-1669. doi:10.1136/jnnp.2005.070136
510. Zimmer BD, Bickel P, Dittrich A. Changes of simple somatic parameters by delta-9-trans-tetrahydrocannabinol (delta-9-THC) in a double-blind-study. Short communication. *Arzneimittelforschung*. 1976;26(8):1614-1616. <http://www.ncbi.nlm.nih.gov/pubmed/795438>
511. Zuardi AW, Shirakawa I, Finkelfarb E, Karniol IG. Action of cannabidiol on the anxiety and other effects produced by ?9-THC in normal subjects. *Psychopharmacology (Berl)*. 1982;76(3):245-250. doi:10.1007/BF00432554
512. Freeman RM, Adekanmi O, Waterfield MR, Waterfield AE, Wright D, Zajicek J. The effect of cannabis on urge incontinence in patients with multiple sclerosis: A multicentre, randomised placebo-controlled trial (CAMS-LUTS). *Int Urogynecol J*. 2006;17(6):636-641. doi:10.1007/s00192-006-0086-x