



RE-HUSHING COMMENTARIES ON THE EFFECTS AND POTENTIAL BENEFITS OF CANNABIS: LESSONS GHANA CAN LEARN FROM USA AND CANADA

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Abstract

This article focuses on the review and a critical appraisal of the facts on cannabis or marijuana. The global scientific arguments that the existence of delta-9 tetrahydrocannabinol (delta-9 THC) causes a certain degree of harm to the brain especially for persons in their teenage years and even for those below the age of 23-25 years have been looked at. Again, the scientific, legal and ethical arguments on cannabis have been looked at. Attention has been paid to the potential global benefits with its associated ethical and legal issues with emphasis on USA and Canada using information gleaned from documentary and non-documentary sources to serve as lessons for Ghana. Interviews were conducted to get the views of users and former users of cannabis concerning the subject under review. The article postulates that negatives associated from the use of cannabis emanates from THC so the reduction of it may rather make the argument for its legitimization in countries like Ghana be less harmful. It further confirms that the Global Cannabis trade is bringing lots of financial gains to those who are peddling the weed at the expense of nations or governments. In Ghana the police in Kumasi, Accra, Sunyani/domaa and the Volta region have put up a stiff fight against the cannabis trade. Irrespective of the efforts of the narcotic Control Board, the police service and the customs at our borders, weed farms are increasing in Ghana, Jamaicans and persons from the West-Africa sub-region have been accused to be collaborating with indigenous Ghanaians in the venture. Peddlers and users have become innovative and now we have marijuana bitters in Ghana.

KeyWords: Delta-9 Tetrahydrocannabinol (THC), Cannabis, Indian hemp, Wee, Weed, Hashes, marijuana, United States of America (USA), Canada, Ghana.

1.1 Introduction

Marijuana, often called pot, grass, reefer, weed, and herb, Mary Jane or MJ- is a greenish-gray mixture of the dried, shredded leaves, stems, seeds, and flowers of Cannabis sativa-the hemp plant. Most users smoke marijuana in hand-rolled cigarettes called joints. Among other names, some use pipes or water pipes called bongs.¹ Marijuana is also used to brew tea and sometimes it is mixed with foods. Cannabis was very legal – largest agricultural crop in the world including USA. Cannabis hemp was the largest product used in making soft fibre for paper, medicines etc. Cannabis was used as medicines. Fluid extract- cannabis Indica was the name. Significantly, one could not get “high” from industrial hemp.²

In the early 20th century America, the argument to stop the use of cannabis came from journalists with the argument from Reefer Madness- articles which depicted blacks and Mexicans disrespecting whites and insulting them, including stepping on their shadows in public places or laughing at whites.³ Ironically, however, there has been a major incongruence between the scientific knowledge gained and the public understanding of the drug. People often refer to their own experiences with marijuana rather than what scientific data has taught them. It is important to be aware of the growing scientific literature about a drug that is widely misunderstood.

The importance and the dangers associated with the use of marijuana have been amply spelt out through several research projects. Significantly, in recent times in Ghana, the attention of the populace has been drawn to the question of legalization or non-legalization of Cannabis.⁴ It has therefore become necessary to re-evaluate these facts and ascertain the likely impact the use of cannabis could have on Ghana using examples from USA, Canada and Ghana.

1.2 Approach and Data Source

The study employed survey research design with focus on interviews. According to Alford (2011), survey method is a measurement process that involves asking questions of respondents. Thus, collecting information from a small number of people to be representative of a larger number of people. Survey research involves the collection of information from a sample of individuals through their responses to questions.

Survey research owes its continuing popularity to its versatility, efficiency and generalisability. According to Rubin and Babbie (1993), survey may be used for descriptive, explanatory and exploratory purposes. They are chiefly used in studies that have individual people as the units of analysis. Former and present users of Cannabis and a cross section of societal members, hundred in number, were randomly selected in the Kumasi, Sunyani, Domaa and Accra areas in Ghana. These present and past users of cannabis who have been anonymised described the effects of cannabis in their

¹ Timberlake, D.S. A Comparison of Drug use and Dependence between Blunt Smokers and other Cannabis Users. Substance Use Misuse 44(3):401-415, 2009

² Brett Harvard and Adam Scorgie, Documentary on the union business behind getting high-

³ Brett Harvard and Adam Scorgie, Documentary on the union business behind getting high-

⁴ <http://thechronicle.com.gh/marijuana-ntampi-usage-in-ghana/>, <http://www.myjoyonline.com/opinion/2014/March-24th/end-of-debate-let-marijuana-remain-illegal.php>

physical, mental and social lives. Research papers that focus on experts in mental health hospitals in already mentioned respective cities in Ghana have been assessed to confirm or denounce whether Cannabis causes mental health challenges. News paper sources have been used to identify the degree of marijuana possession, its growing, usage and sale in Ghana, the associated crimes related to it and the mitigating factors the governments and the people of Ghana have put in place if any. Finally, the cross section of societal members in the respective communities in Ghana (Kumasi, Sunyani/domaa, Accra) were also asked about their perceptions on marijuana growing, possession and usage. These areas were chosen because of increasing use of marijuana by the youth.

1.3 Review Questions

The following questions have been framed to guide the discussions in this paper:

- Are there negative impacts of cannabis on humans? Are there examples Ghana can learn from countries like the USA and Canada?
- Is Tetrahydrocannabinol (THC) a major reason why people and citizens of nations should stay away from Cannabis?
- Does Cannabis reduce the ability of the brain to function at optimum Capacity?
- Does it pose any health threat to users in Ghana?
- Should Cannabis be legalised in Ghana?
- What are the ethical issues concerning the use of cannabis?

2.1 Negative Impacts of Marijuana on Humans; Facts from the United States of America

Marijuana is the dried leaves and flowers of the cannabis plant. Tetrahydrocannabinol (THC) is the main ingredient in marijuana that causes people who use it to experience a calm euphoria. THC, the main active ingredient in marijuana, binds to and activates specific receptors, known as cannabinoid receptors. By activating these receptors, THC interferes with the normal functioning of the cerebellum, the part of the brain most responsible for balance, posture, and coordination of movements. The cerebellum coordinates the muscle movements ordered by the motor cortex. The hippocampus, which is involved with memory formation, also contains many cannabinoid receptors. Studies have suggested that marijuana activates cannabinoid receptors in the hippocampus and affects memory by decreasing the activity of neurons in this area. The effect of marijuana on long term memory is less certain but while someone is under the influence of marijuana, short term memory can be compromised. Further, research studies have shown chronic administration of THC can permanently damage the hippocampus of rats, suggesting that marijuana use can lead to permanent memory impairment.

Marijuana also affects receptors in brain areas and structures responsible for sensory reception. Marijuana interferes with the receiving of sensory messages (for example, touch, sight, hearing, taste, and smell) in the cerebral cortex. When marijuana is smoked, its effect begins almost immediately. THC rapidly passes from the lungs into the bloodstream, which carries the chemical to organs throughout the body including the brain. The effects of smoked marijuana can last from 1 to 3 hours. If marijuana is consumed in foods or beverages, the effects appear later- usually in 30 minutes to 1 hour- but can last up to four hours. Smoking marijuana delivers significantly more THC into the bloodstream than eating or drinking the drug. Scientists have found that THC is what produces the “high” users’ experience. In today’s street marijuana, which is usually smoked, producers have increased THC levels by more than four-folds.⁵

The World Health Organization (WHO) ranks the United States first among seventeen European and North American countries for prevalence of marijuana use. And more users start every day. More than 94 million Americans have tried marijuana and it remains the most widely used illicit drug in the nation. In 2008, an estimated 2.2 million Americans used marijuana for the first time; greater than half were under 18.⁶ The Drug Abuse Warning Network (DAWN), a system for monitoring the health impact of drugs estimated that in 2008, marijuana was a contributing factor in over 374,000 emergency department (ED) visits in the United States with about two-thirds of patients being male and 13 per cent between the ages of 12 and 17.⁷ Data from the National Institute on Drug Abuse in America found out that in 1993 marijuana comprised approximately 8% of all treatment admissions but by 2009, that number had increased to 18%.⁸ For those under 18, marijuana related treatment admissions increased by 188 percent from 1992 to 2006 while other drugs remained steady.⁹ Data from the United States is corroborated with data from other countries. In the European Union, the percentage of marijuana as the primary reason for entering treatment increased by 200 percent from 1999 to 2006, and currently stands at around 30 percent of all admissions.¹⁰ The Netherlands has the highest rate of marijuana addiction in Europe.¹¹

⁵ See, for example

<http://news.olemiss.edu/index.php?option=content&view=article&id=4545%3Acannabispotency051409&itemid=10>

⁶ Ibid

⁷ Ibid

⁸ Substance Abuse and Mental Health Services Administration. (2009). Office of Applied Studies. Treatment Episode Data Set 9TEDS): 2009 Discharges from Substance Abuse Treatment Services, DASIS.

⁹ Substance Abuse and Mental Health Services Administration. (2009), Office of Applied Studies. Treatment Episode Data Set 9TEDS): 2009 Discharges from Substance Abuse Treatment Services, DASIS.

¹⁰ Room, R., Fischer, B., Hall, W. Lenton, S. and Reuter, P. (2010). Cannabis Policy: Moving Beyond Stalemate, Oxford, UK: Oxford University Press

¹¹ MacCoun, R. J. (2011), what can we learn from the Dutch cannabis coffee shop system? *Addiction*, 106:1899-1910.

2.2 Main Health Harms of Marijuana; the United States Examples

The main health harms of marijuana have been summarized as follows: Marijuana use can cause an increase in the risk of heart attack more than four-fold in an hour after use and provokes chest pain in patients with heart diseases.¹² Marijuana smoke contains carcinogens and could be an irritant to the lungs, resulting in greater prevalence of bronchitis, cough and phlegm production.¹³ Marijuana smoke contains fifty to seventy per cent more carcinogenic hydrocarbons than tobacco smoke, as reported by the American Lung Association.¹⁴ Scientists have found a definitive marijuana-lung cancer link. Marijuana use has been shown to be significantly linked with mental illness, especially schizophrenia and psychosis, but also depression and anxiety.¹⁵ Also, marijuana smoking during pregnancy has been shown to decrease birth weight, most likely due to effects of carbon monoxide on the developing foetus.¹⁶ Other studies have found that marijuana use is linked with dropping out of school, and subsequent unemployment, social welfare dependence and a lower self-reported quality of life than non-marijuana abusing people.¹⁷ According to the U.S National Survey on Drug Use and Health, youth with poor academic results were more than four times more likely to have used marijuana in the past year than youth with an average or higher grades. This is consistent with an exhaustive meta-analysis examining four dozen different studies by Macleod and colleagues, published by *Lancet*, who found that marijuana use is consistently associated with reduced grades and a reduced chance of graduating from school.¹⁸ Ellickson and colleagues at the RAND corporation surveyed almost 6000 students aged 13-23 and found that the teens who smoked cannabis from once a week to monthly at aged 13 decreased their abuse by age 18 and as young adults, smoked 3-10 times a year lagged behind all other groups in earnings and education when resurveyed at aged 29.¹⁹ In addition, studies have linked employee marijuana use with “increased absences, tardiness, accidents, workers’ compensation claims and job turnover.”²⁰

2.3 Impact on the Adolescent Brain

Studies on marijuana have confirmed that the adolescent brain, particularly the part of the brain that regulates the planning and complex cognitive behaviour, personality expression, decision making and social behaviour, is not fully developed until the early to mid-20s. Developing brains are especially susceptible to all of the negative effects of marijuana and other drug use.²¹ One of the most well-designed studies on marijuana and intelligence, released in 2012, found that marijuana use reduces IQ by as much as eight points by age 38 among people who started using marijuana regularly before age 18 but then stopped.²² The use of marijuana can produce adverse physical, mental, emotional and behavioural effects. It can impair short-term memory and judgment and distort perception. Because marijuana affects brain systems that are still maturing through young adulthood, its use by teens may have a negative effect on their development. Marijuana use directly affects the brain specifically the parts of the brain responsible for memory, learning, attention and reaction time. These effects can last up to 28 days after abstinence from the drug.²³ One of the questions under active research today is whether the normal cause of the brain development during adolescence is altered by a heavy use of marijuana during this period of active neural reorganization. We are currently aware of significant ebbing and flowing in the level of cannabinoid receptors and cannabinoid neurotransmitters throughout the adolescent brain development.²⁴

Not only does the brain’s natural endocannabinoid neural system undergo developments throughout adolescence but it also helps guide the development of the rest of the brain. The proper laying down of nerve tracts within the brain is facilitated by our natural cannabinoids. Even the maturation of other neurotransmitter systems is influenced by our endogenous cannabinoid system. Exposure to excessive cannabinoid stimulation from the outside during early phases of development has been shown to alter the normal development of endorphin, glutamate, and GABA, Serotonin and

¹² Hall W & Degenhard L (2009). Adverse health effects of non-medical cannabis use. *Lancet*, 374:1383-1391

¹³ Tetrault, J.M., et al. Effects of cannabis smoking on pulmonary function and respiratory complications: a systematic review. *Arch Intern Med* 167, 221-228 (2007)

¹⁴ Hoffman, C.; Brunnemann, K.D.; Gori, G.B.; and Wynder, E.E.L. On the carcinogenicity of marijuana smoke. In: V.C. Runeckles, ed., *Recent Advances in Phytochemistry*. New York: Plenum, 1975.

¹⁵ See, for example: Moore TH, Zammit S, Lingford-Hughes A, et al. Cannabis use and risk of psychotic or affective mental outcomes: A systematic review. *Lancet* 370(9584):319-328,2007. Also Large, M., Sharma S, Compton M., Slade, T. & O., N. (2011). Cannabis use and earlier onset of psychosis: a systematic meta-analysis. *Archives of General Psychiatry*. 68. Also see Arseneault L, et al. (2002). Cannabis use in adolescence and risk for adult psychosis: longitudinal prospective study. *British Medical Journal*. 325, 1212-1213.

¹⁶ Hall W & Degenhard L (2009). Adverse health effects of non-medical cannabis use. *Lancet*, 374:1383-1391

¹⁷ Fergusson, D. M. and Boden, J.M. (2008), Cannabis use and later life outcomes. *Addiction*, 103:969-976.

¹⁸ Macleod, J.; Oakes, R.; Copello, A.; Crome, I.; Egger, M.; Hickman, M.; Oppenkowski, T.; Stokes-Lampard, H.; and Davey Smith, G. Psychological and social sequelae of cannabis and other illicit drug use by young people: A systematic review of longitudinal, general population studies. *Lancet* 363 (9421):1579-1588,2004.

¹⁹ Ellickson, P.L.; Martino, S.C.; and Collins, R.L. Cannabis use from adolescence to young adulthood; Multiple developmental trajectories and their associated outcomes. *Health Psychology* 23(3):299-307,2004.

²⁰ National Institute on Drug Abuse (NIDA). (2011). Research Report Series: Cannabis Abus. Accessed November 2011 at <http://www.drugabuse.gov/Research/Reports/Cannabis/cannabis4.html>

²¹ Giedd. J. N. (2004), Structural magnetic resonance imaging of the adolescent brain. *Annals of the New York Academy of Sciences*, 1021, 77-85.

²² Meier et al. (2012), Persistent cannabis users show neuropsychological decline from childhood to midlife; *Proceedings of the National Academy of Sciences*.

²³ Hall W & Degenhard L (2009). Adverse health effects of non-medical cannabis use. *Lancet*, 374:1383-1391

²⁴

Catecholamine (example, Adrenaline and dopamine) neural systems. We are therefore certain that critical periods occur when the excessive cannabinoid stimulation produced by the marijuana have significant impacts on the causes of brain development.

2.4 Marijuana Addiction and Dependence

Contrary to popular beliefs, marijuana usage can be very addictive.²⁵ Scientific research has found that one in ten marijuana users will become addicted to the drug. And if one begins in adolescence, that number rises to one in six.²⁶ Users who try to quit experience withdrawal symptoms that include irritability, anxiety, insomnia, appetite disturbance and depression.^{27,28} Recent research in animals has also suggested that long term use of marijuana (THC) produces changes in the limbic system that are similar to those that occur after long term use of other major drugs of abuse such as cocaine, heroin or alcohol. These changes are most evident during withdrawal from THC. During withdrawal, there are increases in both the levels of a brain chemical involved in stress and certain emotions and the activity of neurons in the amygdala. These same kinds of changes also occur during withdrawal from other drugs of abuse, suggesting that there may be a common factor in the development of drug dependence. Neuroscientists have demonstrated that marijuana affects the brain reward centers in similar ways as all other known drugs of addiction (Kolb, Gorny, et al. 2006)

Animal studies have demonstrated consistent withdrawal patterns of behavior when THC, the main active ingredient, is given twice a day for one week and then suddenly withdrawn. (Thunda and Goldberg 2003) Clinical reports in humans reveal a similar pattern of withdrawal symptoms during the first weeks of abstinence (Budney and Hughes 2006). Common symptoms of marijuana withdrawal (reported by more than 70 percent of abstinence individuals) include anger or aggression, decreased appetite or weight loss, irritability, nervousness/anxiety, restlessness and sleep difficulties including strange dreams. Epidemiologists have found that approximately 9% of people who begin smoking marijuana at 18 years or older satisfy the criteria for dependency. This number triples at ages under eighteen. For near-daily users, the risk for dependence at some time later in life is estimated to be 35-40%. The epidemiology of marijuana dependence appears to be relatively predictable. While approximately 9% of all individuals who begin using marijuana after age 18 eventually satisfy the criteria for dependence at some time in their lives, much higher rates hold for individuals who initiate use before 18, with the highest rates being shown by the youngest initiates.

Children and adolescents' brains and personalities are mostly under rapid development. As a result, they can become addicted more often and more rapidly than adults. For example, only 4.4% of individuals who start smoking marijuana after age 21 become addicted within the first two years of use while 17.4% of thirteen-year-olds become addicted within the first two years (similar percentages also hold for the risk of developing alcohol dependence). Whereas adults recover cognitively more quickly, adolescent marijuana users demonstrate more prolonged decreased psychomotor speed and diminishment in several higher functions including sequencing ability, story learning and complex attention. There is little doubt about the existence of an association between marijuana use and psychotic illness. Six longitudinal studies in five countries show that regular cannabis use confers a two-fold increase in the risk for later schizophrenia. Finally, long-term heavy marijuana use, which most often begins during early adolescence, has been shown to eventually decrease the size of the hippocampus by 12% and the amygdala by 7%. In addition, studies have demonstrated up to 44% fewer synapses in the hippocampi of animals chronically exposed to THC.

Heavy marijuana use decreases the brain's responses to losses, leading individuals to make choices based more on gains than on the size of any losses. Aversive experiences are reduced in their influence. The result is the development of inefficient strategies for solving problems- a bad foundation for psychological development during childhood and adolescence. While the majority of children and adolescents who use marijuana do not become dependent and are not grossly harmed, the fact remains that their brains are modified. This is the reason people smoke marijuana; to change their brains and thus to change their experience. Altered brain function alters a person's subjective experience of themselves and the world. However, altering brain function by introducing excessive cannabinoid stimulation also physically alters the brain well beyond the period of initial intoxication. When marijuana use becomes daily, or nearly daily, this alteration to the brain can become chronic and structural. In very many cases, children and adolescents who reach this point in their marijuana use do not perceive the ongoing impact of marijuana on their experience nor do they often connect any negative changes in their lives with marijuana use.

2.5 Marijuana use and Driving

Marijuana use and driving is also one of the important issues that have been scientifically researched. In the past decade, researchers from all corners of the world have documented the problem of marijuana use and driving.^{29,30,31,32,33,}

²⁵ Ibid

²⁶ Wagner, F.A & Anthony, J.C. From first drug use to drug dependence; developmental periods of risk for dependence upon cannabis, cocaine, and alcohol. *Neuropsychopharmacology* 26, 479-448 (2002)

²⁷ Hall W & Degenhard L (2009). Adverse health effects of non-medical cannabis use. *Lancet*, 374:1383-1391

²⁸ NIDA, Research Report Series: Cannabis Abuse, 2010

²⁹ Drummer, O.H., Gerostamoulos, J., Batziris, H., Chu, Chu, M., Caplehorn, J.R., Robertson, M.D., Swann, P. (2003). The incidence of drugs in drivers killed in Australian road traffic crashes. *Forensic Science International*, 134(2-3), 154-162.

³⁰ European Monitoring Centre for Drugs and Drug Addiction.(2003) Drugs and driving: ELDD comparative study. Lisbon, Portugal; Author. Retrieved March 29, 2011 from http://www.emcdda.europa.eu/attachment_s.cfm/att_5738_EN_Quantities.pdf

³¹ Morland J. (2000) Driving under the influence of non-alcoholic drugs, *Forensic Science Review*, 12. 80-105.

³² ROSITA Roadside Testing Assessment: www.rosita.org

³³ DRUID: www.druid-project.eu

³⁴Linked to deficits in the parts of the brain that are important for driving, including the impairment of motor coordination and reaction time, a widely-cited article in the British Medical Journal from 2012 concluded that marijuana use doubles the risk of car crashes.³⁵ Another recent meta-analysis of nine studies found that marijuana use by drivers is associated with a significantly increased risk of being involved in motor vehicle crashes.³⁶

2.6 Some Positive Impact of Marijuana on Humans

When made synthetically and given orally, THC can be used to treat nausea associated with chemotherapy and stimulate appetite in AIDS wasting syndrome. It may also be useful for other conditions, including glaucoma. Our natural cannabinoid system is an integral part of the brain's mechanism for forgetting especially painful memories. Decreasing cannabinoid tone prevents extinction of aversive learning and increasing cannabinoid tone promotes forgetting of aversive experiences. Measurements of activity in the amygdala of individuals suffering from PTSD (Characterized by inability to quell reactions to traumatic events) reveal extreme reactivity to fearful faces. This may explain why marijuana is frequently the drug of choice for PTSD sufferers, since the THC reduces activity in the amygdala and temporarily extinguishes the aversive memories. While this appears to suggest that marijuana is a useful "medicine" for PTSD, this would fail to recognize that our natural cannabinoid system produces the extinction of aversive memories by interacting with a specific subset of CB1 receptors while THC from the outside interacts with all CB1 receptors. The role of our cannabinoid system in aiding the forgetting of aversive memories is important because young marijuana users become less likely to learn from negative experiences when they are chronically suppressing their amygdala response to threat. As a result, euphoric recall (the good times while "high") will predominate over any negative aspects of their marijuana experience.

Phan et al, (2008) reported that an acute dose of oral THC is associated with a decrease in threat-related *amygdala* (The *amygdala* is an almond shaped mass of nuclei located deep within the temporal lobe of the brain. It is a limbic system structure that is involved in many of our emotions and motivations, particularly those that are related to survival. The *amygdala* is involved in the processing of emotions such as fear, anger and pleasure. The *amygdala* is also responsible for determining what memories are stored and where the memories are stored in the brain. It is thought that this determination is based on how huge an emotional response an event invokes)³⁷ reactivity during a social threat stimulus task. Thus, a higher level of cannabis use was consistently associated with a lower level of *amygdala* reactivity across all subjects. These findings are consistent with the reports by Phan et al. (2008) and Hariri et al. (2009) suggesting that cannabinoids have an inhibitory effect on threat-related amygdala reactivity.

2.7 Ethical and Medical Issues: United States

In the USA, there are increasing number of deaths and murders because of drugs. The drug trade hires criminals every now and then knowing that the trade is illegal persons who engage in it are mostly delinquents and adults with criminal records. Both experts and citizens have argued that the system should be highly regulated and controlled through legalization so that thugs will not recruit young people. This argument has not been supported by the Church and some Christian organizations. They feel that legalizing cannabis is naïve; it is going to focus on young people like alcohol and tobacco. Their argument among other things is marijuana combines the worst aspect of alcohol and tobacco. It is addictive and dangerous. Drug driving in California for instance is worse than drunk driving.

Countries like the United Kingdom and Netherlands have re-criminalized marijuana. This notwithstanding, it has been argued that the use of marijuana and the legalization will increase government's revenue through taxation. This has the potential to rake in millions of dollars for the government hence, the persistent call for especially the citizens of the United States of America to deal with the stigma attached to the use of cannabis. Again, it is also based on the argument that people take different drugs like Prozac, vicoten, zenex, oxycoden etc. which are harmful. It has been argued that once the cannabis would be bought from clinics when legalised but not at street corners, users will be assured that it has not been mixed with any other chemical which could be detrimental to the health and wellbeing of the individual.

They also argue that cigarette smoking, especially alcohol addiction, is the number one cause of preventable death in America but not marijuana. There seems however, to be an America's Marijuana Obsession. The marijuana mamas or pot mamas in Beverly Hills claim that marijuana is a medication. They argue that few inhales and cookies of marijuana are good for humans. "Pot makes us better", they argued. It makes them more interactive with their children, reduces anxiety and reduces pain. When the governments or authorities, especially law makers in America agree that Candy or cookie can be regulated to prevent overdosing and when the cannabis consumers as well as the media do speak well of it, America would be moving closer to legalizing it. Already, persons in America are creating million dollar jobs out of it in America. They even beat their chest and say cannabis is helpful in preventing suicide among ex-service men in America.³⁸

Mellisa Etheridge has argued on the Medicinal purposes of marijuana. Marijuana registered persons in California use it as medicine. Mellisa used it to stop gastro intestinal disorders she had after chemotherapy. Persons under stress have been given marijuana as stress reliever. Significantly, Spur Lock has argued for the need to increase the cannabinoid (CBD) (Recently, research has shown CBD to have analgesic, anti-inflammatory and anti-anxiety properties without the psychoactive effects) (the "high" or "stoned" feeling) that THC provides. While high THC strains often tout levels of

³⁴ Verstraete, A.G. & Raes, E. (Eds). (2006). Rosita-2 Project Final Report. Ghent Belgium: Ghent University.

³⁵ M. asbridge, J.A. Hayden, J.L. Cartwright. Acute cannabis consumption and motor vehicle collision risk: systematic review of observational studies and meta-analysis. *BMJ*, 2012; 344 (feb09 2): e536 DOI: 10.1136/bmj.e536

³⁶ Li, M., Brady, J., DiMaggio, C., Lusardi, R., Tzong, K. and Li, G. (in press). Cannabis use and motor vehicle crashes. *Epidemiologic Reviews*.

³⁷ Regina Bailey, Amygdala, <http://biology.about.com/od/anatomy/p/Amygdala.htm> (accessed, 27th March, 2014)

³⁸ Sanjung Gupta, Medical Facts of Marijuana, A Weed Documentary

over 20%, generally, CBD levels of over 4% are considered to be high)³⁹ in marijuana. He argued for Cross-breeding to reduce the THC and increase the CBD which has the potential to change lives. For instance, it heals rare disorder of the diaphragm. It is called *micronus diaphragtic* a disease that cause extreme speech impairment and poor breadth control. The argument that marijuana is better at treating this rare disease than any other drugs has been advanced. It looks to be especially promising for conditions that are difficult to treat such as *Crohn's disease*, *multiple sclerosis* among others. Lately, it is one of the rarest of these conditions, *Dravet's Syndrome* that is getting a lot of attention from both the medical community and the public. *Dravet's Syndrome* is an especially debilitating form of epilepsy that affects children and is notoriously resistant to current approved treatment methods. Sufferers are plagued by seizures, often up to hundreds a day that worsen as they age and can be life-threatening. Currently, treatment methods include having the child wear an eyepatch, specialized diets and brain surgery, but all have mixed success rates.⁴⁰

The use of marijuana is to some a lifestyle and to others a lifeline. It is a delicate balance which can make simple tasks become very frustrating. For instance, Dr. Jule Holand- gets paranoid, panic attacks, anxiety attacks, disorganized thinking and disoriented when uses marijuana. Again, Carl Hart of Columbia University argued that it causes disruption in memory, disruption in inhibitory control, makes one slow at cognitive functioning but they are temporary but pronounced. The area of the brain that is basically affected is the pre frontal cortex (planning, thinking, coordination). It causes impairment in driving and makes people turn without looking carefully.

Institute of Medicine Research sponsored by the US government (1999) has argued that the use of marijuana could cause lung cancer. But no case has been proven to support it. However, Dr. Paul Hornby, a biochemist and human pathologist has argued that smoke generally is harmful but it is not necessarily marijuana that has toxins. This notwithstanding, Dr. Lester Grinspoon, a medical doctor and a Professor Emeritus of the Harvard Medical School has argued that smoke does not cause cancer. Dr. Donald Tashkin, UCLA, "marijuana use and lung cancer: results of a case-control study-suggests certain elements in tobacco causes cancer but marijuana does not. According to Donald, Marijuana use does not cause potentiates emphysema in any way". He has argued that tobacco causes an average of 430,000 deaths per year but receives government subsidy in the US. In the North America, no one medical facility or university has recorded death attributed to marijuana.⁴¹

However, it has been argued that in terms of addiction, more teenagers and kids are being treated today in the North America for marijuana addiction than for all the other drugs combined. Nevertheless, habitual smokers do not feel impaired (that is, if they have lots of experience). A certain Sharlette who had 360 seizures a day by taking marijuana with high CBD has reduced the seizures to one (1). She can eat, talk and move something she could not do before.⁴²

Medical Marijuana Research Capital in Israel was the first to isolate THC from CBD. Several studies in Israel have confirmed the use of marijuana for the reduction of pain in chemotherapy. It also deals with pain generally and loss of appetite. The Cheeba Medical Centre-Israel has confirmed that people have been cancer-free for a long time after the consumption of cannabis. They claim it has the potential to kill cancer cells especially to reduce brain damage and injuries in mice but are yet to do clinical test on humans.⁴³

According to Gupta, people overdose every 19 minutes of prescribed medication and die. He argued that the long term negative impact of marijuana is far less than alcohol. Liver diseases, scleroses and cardiac disease are much worst with alcohol.⁴⁴ These arguments seem to suggest that the use of cannabis might not be as harmful as it has been portrayed. This notwithstanding, it is clear that society must have a sense of commitment towards the positive utilization of cannabis and must also have a strong institutional and legal framework to deal with the potential excesses and dangers associated with the illicit usage of the "weed".

3.1 The Situation in Canada

In the documentary, *The Union –Business Behind Getting High* by Brett Harvard and Adam Scorgie, they show how in British Columbia (Canada), the illegal cannabis trade is estimated to be around 7 billion dollars annually. 85% of the products go to the United States. Dr. Perry Kendall of British Columbia, provincial Health officer says whether the drug is criminalized or decriminalized, it does not affect the rate of intake of the drugs or discontinuation.⁴⁵

Xia Zhang, university of Saskatchewan, reported in the journal of clinical investigation (2005) that Marijuana can stimulate brain cell growth. "Subject Narcotic" 1951, presented by the Narcotic Educational Foundation of America argued that the use of marijuana can be habituating but its use can be easily discontinued as compared with the other drugs like tobacco and heroin.⁴⁶

It's been argued that only one out of 104 marijuana users uses cocaine and less than one (1) uses heroine. If you have a black market and have a dealer dealing in marijuana and other drugs like heroin and cocaine, understand that the black market in itself and prohibition by governments to prevent people from having an open market for the cannabis trade will get more people susceptible from seeing these other drugs like cocaine and heroin apart from marijuana. The argument is that there is a gate-way effect through prohibitions. In North America, there are more crimes caused by drinking alcohol and other substances than marijuana.⁴⁷

³⁹ <http://www.leafly.com/news/lifestyle/whats-the-deal-with-these-high-cbd-strains>

⁴⁰ Ibid.

⁴¹ Sanjung Goupta, Medical Facts of Marijuana, A Weed Documentary

⁴² Sanjung Goupta, Medical Facts of Marijuana, A Weed Documentary

⁴³ Sanjung Goupta, Medical Facts of Marijuana, A Weed Documentary

⁴⁴ Ibid

⁴⁵ Dr Perry Kendall in the *Union Business Behind Getting High*- A documentary by Brett Harvard and Adam Scorgie

⁴⁶ Dr Perry Kendall in the *Union Business Behind Getting High*- A documentary by Brett Harvard and Adam Scorgie

⁴⁷ Ibid

It has been argued that growers of marijuana who do not get caught have their prices go up because it is unregulated. Essentially, it makes the persons dealing in it to have monopoly to make excessive profits. These persons do not advocate for government regulation and legalization. It will reduce the prices of the products. Once regulated, one is likely to get it out of the hands of persons of crime and ensure proper and regulated use. The argument is legalize marijuana, tax it and get the money to the healthcare system. However, the license to sell marijuana when legalized should be hard to get and easy to lose especially when one sells it to a minor below the regulated or acceptable age of use.

Again, in British Columbia, 100 dwelling units grow weed. Growers of marijuana sometimes redirect their income into other businesses like Restaurants and the sale of cars etc.

An estimated 7.7 billion dollars is spent annually by the US government to enforce marijuana prohibition. 400 million dollars is spent annually in Canada arresting and prosecuting marijuana crimes. The total budget in Canada for all drugs is 500 million dollars.⁴⁸ Holding marijuana and/ being caught in the US meant one will not be given a grant or loan to go to college yet, 430,000 die smoking cigarettes in the USA and 5 million across the globe. Dealing with about 10,000 patients the last 15 years-over 200 medical conditions respond favourably to cannabis. This has the potential to compete with the pharmaceutical industry which is controlled by great influential leaders and persons.⁴⁹ This in essence makes the argument for Cannabis a complex one. This is because in America and the globe the arguments against those dealing in pharmaceuticals have not been fully resolved. The questions are many. One of them is why do people make drugs that kill humans but a lot of fuss is not made about it but when people use “weed” which equally has medicinal and harmful components like the drugs from the drug manufacturing and pharmaceuticals companies, institutions and governments go wild? The answer is not simple. It could be moral or ethical or national interest. Yet in a simple sense we can say that the level of scientific advancement and research, infrastructure and good legal framework for the use or non-usage of weed might help a country to find a way around it.

3.2 Does Cannabis Pose a Threat to Users in Ghana?

In Ghana, responses from users of cannabis as well as primary reports from the news papers and published articles from journals suggest that the use of cannabis is prevalent in Ghana. The abuse of it could be alarming. Helena Selby has reported that the abuse of drugs is one of the most popular social vices among the youth in Ghana. The fight against the use of drugs and especially drug addiction has become the priority of many world leaders. It has been argued that even though drug abuse and addiction is a challenging issue, the number of young people engaged in it increases every day.⁵⁰ In Ghana, the use of drugs especially marijuana is no more news in the various communities, as many drug users do not care about the stigma associated with it in Ghana.⁵¹ In the past, users hid themselves when using the substances. However, things seem to have changed as some hide themselves while others smoke it in the public especially, in beer parlours and night clubs.⁵²

However, Ghanaians have identified the use of marijuana as one of the issues, which really drags down the progress of the nation especially in instances where users lose their minds and are sent to mental institutions. With the state of conditions of Ghana’s mental hospitals and the number of users increasing by the day, what will then be the tendency to put pressure on the health resources of the country? Significantly, the government would be compelled to pump some of its scarce resources into taking care of them. Some also find themselves on the streets and in prayer camps. In Ghana, the substance mostly abused is marijuana (Indian hemp or wee) which is the cheapest drug and packaged at Gp50 per piece, which is very affordable. The use of heroin and cocaine is not very popular among substance abusers in Ghana due to their high cost. According to the 2007 World Drug Report by the UN Office on Drugs and Crime, 21.5% of Ghanaians aged from 15 to 64 smoked marijuana or used another cannabis product in 2006. The report continues that Ghanaians use marijuana more than five times the world average which, as a result, has made Ghana the leader of African countries and third in the world in cannabis or marijuana.⁵³ The report further indicates that Ghana ranks third in the world on marijuana use, behind Papua New Guinea and Micronesia with twenty-nine per cent each. If Ghana was the leading country in the usage of marijuana in Africa and the third in the world, as of 2007, then it is possible that the curve can continue to rise.

Some years ago, “Rastafarians” were the most popular users of marijuana in Ghana but things have changed.⁵⁴ Users are mostly the youth some of whom are migrants who have moved from rural to urban areas for greener pastures. Several of these youth during their stay in the various cities get themselves involved in substance smoking.⁵⁵ Again, students in the senior high schools and at the tertiary levels have also been identified as users of marijuana in Ghana. Significantly, the youth from both rich and poor homes smoke marijuana in Ghana.⁵⁶ Interviews conducted by Selby at Agboghloshie, a suburb of Accra, where electronic waste are burnt showed that several of the youth, coming from the northern part of Ghana, smoke marijuana while burning the electronic waste. When one piece is lighted, it is transferred from one person to another till it is finished. Sometimes, they go to the extent of fighting

⁴⁸ Ibid.

⁴⁹ Ibid.

⁵⁰ Helena , Marijuana (ntampi) usage in Ghana, <http://thechronicle.com.gh/?p=23371>
4th May, 2011

⁵¹ Ibid.

⁵² Ibid.

⁵³ Helena , Marijuana (ntampi) usage in Ghana, <http://thechronicle.com.gh/?p=23371>
4th May, 2011

⁵⁴ Ibid

⁵⁵ ibid

⁵⁶ Ibid

over one lighted piece with the explanation that one took a longer time to transfer it to another.⁵⁷ The interviewees were not bothered about the level of heat produced by the heat emanating from the burning of the electronic waste.⁵⁸

Also at Tudu, a suburb of Accra, marijuana is referred to as “taaba, ntampi or ganja.” It is sold by wholesalers to retailers in the various communities outside Tudu. The popularity of the place and the rate at which social vices occur there compelled the police to raid there in the late part of April 2011 to arrest several users since the use of marijuana is illegal in Ghana. Significantly, this among other things links marijuana or cannabis usage with crime in Ghana. Students from Senior High Schools in Ghana have been found to be involved in the use of cannabis. On 6th May, 2006, it was reported that three students in the Accra metropolis were injured in clashes over marijuana.⁵⁹ Reports in 2012 confirmed that the courts jailed people for a period not less than ten years.⁶⁰ Some of the persons who were jailed confirmed that several of their customers were students. For instance, in 2012, the deputy superintendent of police, Mahamud Yusif, Dormaa Municipal police Commander in an interview with the Ghana News Agency expressed grave concern about the spate of weed smoking among the youth in general and students in particular in the area.⁶¹

In 2005, the three psychiatric hospitals (Ankaful, Accra and Pantang) recorded a total of 86,003 outpatient attendances (Ofori-Atta et al., 2010) with mental and behavioural disorders due to psychoactive substance use representing 22.8% of the in-patient diagnosis.⁶² The *Out-patient Monthly Morbidity Returns* records from the Psychiatric Unit of the Regional Hospital, Sunyani, for 2012 for instance, indicates that of the 2,284 clients who reported with various psychiatric illnesses for the year, 594 (26%) were substance abuse related cases, mostly marijuana. Furthermore, the *Drug News Africa* in 2012 estimated that about 1.25 million Ghanaians are known to be having problems with drugs, mostly marijuana. Other studies on substance abuse in Ghana report even more frightening statistics.⁶³

Arguably, more people may be using and abusing drugs in Ghana than it is estimated. The *Ghana Demographic and Health Survey's* (GDHS) Report for 2010 stated that the region in recent times is not only a transitory route but also a consumer market of hard drugs. Reports of foreigners financing “wee” farms in Ghana points to Jamiacans and other West-African nationals.⁶⁴ In 2009, a team of police men destroyed an eighty-acre cannabis plantation at Kpota near Akplamafu in the Hohoe municipality of the Volta region of Ghana.⁶⁵



Source: Ghanaian Times

The use of cannabis has brought about several innovations among sellers or peddlers in Ghana. In recent times and even in the past people have been developing or brewing what is called “marijuana Bitters”. It is a concoction made of

⁵⁷ Ibid

⁵⁸ Ibid

⁵⁹ William Yaw Owusu, “Three students injured in Clash Over Wee” *Ghanaian Times*, 6th May, 2006

⁶⁰ Ghanaian Times, Man jailed for selling “wee”, Friday, May 25th, 2012

⁶¹ Ibid

⁶² Richard Appiah, End of debate: Let marijuana remain illegal (sourced) 24th March, 2014

⁶³ Ibid

⁶⁴ Ghanaian Times, Wednesday, April 8, 2009

⁶⁵ Ibid

akpeteshie (locally brewed gin) mixed with weed. Interviewees and news paper reports have confirmed that this concoction has high patronage. Some operators of drinking or beer bars in Ghana have cashed in on this. This notwithstanding, the police service of Ghana has not made their trade or business an easy going task for them.⁶⁶ Users of this new “bitters” have been found to be involved in crimes. Some have been caught snatching mobile phones and other valuables of residents in Accra and rape women. In instances where police organises a raid on them, some residents tend to give a certain moral support to the Police Service.⁶⁷

The question of economic or financial gains cannot be overlooked. Significantly, in stances where the youth do not find much profit in the legal businesses in the country, they resort to the marijuana trade. In 2004, a report suggested that Kwadaso “*Bola Kesiem*” in Kumasi, the Capital city of the Ashanti Region of Ghana became a centre for a booming weed trade. This is an area that has wood and furniture business yet the youth in the area did not find it lucrative but rather resorted to the marijuana trade. This particular trade was not done under cover but in the open.⁶⁸ Upon writing this paper, it was not confirmed by informants that the marijuana trade has been absolutely nipped in the bud.

In February 2013, five wee trucks were seized by the police in the volta region of Ghana. Peddlers in the cannabis trade have used various strategies to convey the cannabis from one place to the other. The leaves are mostly tightly packed and stashed in the sides, doors, floors, roofs and engine compartments of buses.⁶⁹

3.3 Should Ghana Legalise Cannabis? Medical and Moral Arguments

The Director of the Narcotics Control Board (NACOB), Mr. Akraasi Sarpong has made his *points* and called for a national debate on the legalization or otherwise of marijuana use in Ghana. People find this call both important and to some extent unethical. The related questions people are asking is government *should* legalize marijuana, generate income and then *what?* What are the implications? The implications are that people are going to suffer from the dangers associated with Cannabis and if its usage is not strictly regulated in a country where law enforcement has grave deficits the social ramifications could be alarming.

It is however, not monotonous to stress that the dangers associated with THC, The principal psychoactive ingredient of cannabis, will continue to interrupt memory, learning, attention, and reaction time as long as 28 days after abstinence from the drug (Hall & Degenhard, 2009). The use of cannabis causes an increase in the risk of heart attack more than four-fold in the hour after use and provokes chest pains in patients with heart disease (Hall & Degenhard, 2009). Its irritation of the lungs resulting in greater prevalence of bronchitis, cough, and phlegm production (Tetrault, et al., 2007), will not cease because a country like Ghana chooses to legalise it.

Significantly linked with mental illness, especially schizophrenia and psychosis and also depression and anxiety (Large, et al., 2011), it’s been found that it doubles the risk of car crashes (Asbridge, et al., 2012), reduces IQ by as much as eight points by age 38 (Meier, et al., 2012) and results in poor quality of life outcomes and poor job performance (Macleod, et al., 2004). This in essence buttresses the earlier discussions on cannabis usage and accidents on the roads. Already road accidents have become an alarming situation in the country and the government of Ghana as well as civil society and other stakeholders are making efforts to stem it, would it therefore be necessary for us to encourage the use of marijuana in the face of excessive road carnage? As already noted in the discussions about lessons from the USA, the literature is replete with several other negative effects of marijuana use including increase in the rates of crime, divorce and psychosis.

Another significant question to ask is, can we be sure that the people of Ghana will “use” and not “abuse” cannabis when it is legalized? Some cannabis addicts are dying (physically and psychologically) but cannot quit, albeit they want to. Alcohol and drugs are notoriously addictive. It has become an alarming issue when users of cannabis tell psychologists and psychiatrists “Please help me to quit. I’d do everything”. discussions with a Psychiatrist, Clinical Psychologist or Clinical Neuropsychologist, or with the alcohol and drug addicts being rehabilitated at the Chosen Rehabilitation Centre in Accra and other mental health centres in Ghana defines a sordid state.

4.1 Conclusion

The overwhelming preponderance of scientific evidence provides adequate rationale for public policies that deter, delay and detect child and adolescent marijuana use. Our goal should be to limit access to marijuana for those under 21, to keep youth engaged in school, to provide schools with resources to identify and help students using marijuana to construct a community-based intervention system to evaluate youth under 18 years of age who are using marijuana problematically and to provide them educational and constructive interventions, and to provide professional treatment to youth who have become dependent on marijuana. Deter, delay and detect.

Again, the high quantity of THC in cannabis has been found from this study to be a major harmful ingredient. Even though it produces the “Highness” that attracts several users, the dangers associated with it even for young users have been confirmed by the study to be very alarming. This notwithstanding, it is significant to note that the lessons and examples from the United States of America and Canada, concerning the use of cannabis or marijuana cannot be overlooked. It has been learnt that the use of cannabis have several health related problems ranging from heart diseases, schizophrenia and poor performance amongst children of school going age. Increasing cannabis use was associated with increasing risks of leaving school without qualifications, failure to enter university and failure to obtain a university degree.

⁶⁶ *Akpetishie* laced with wee: Police Swoop on producer, The Ghanaian Times, April, 19th, 2007, Three Arrested for possessing Wee, Spectator, October, 26th, 2013

⁶⁷ Ibid

⁶⁸ Wee Trade Booms at Kwadaso “*Bola*” *Kesiem*, The Pioneer, January 29, 2004

⁶⁹ Five Wee trucks Seized, The Ghanaian Times, February, 23, 2013

Findings further support the view that cannabis use may act to decrease educational achievements in young people. It is likely that this reflects the effects of the social context within which cannabis is used rather than any direct effect of cannabis on cognitive ability or motivation.⁷⁰ The relationships between executive processes, associative learning and different aspects of real world memory functioning were explored in a sample of cannabis users and nonusers. Measures of executive component processes, associative learning, everyday memory, prospective memory and cognitive failures were administered. Relative to nonusers, cannabis users were found to be impaired in several aspects of real world memory functioning.⁷¹

The impact on driving and accidents in particular as well as other social ramifications cannot be easily quantified. It is pertinent to stress that the case of Ghana is generally unreported, since there is not much research towards this end. Yet it is important to suggest that the dangers associated with the use of marijuana as learnt from the USA and other countries like Canada should make Ghanaians weary of its usage. Its use should only be encouraged on medical grounds but that should be strictly regulated to avoid abuse which can cause harm to the user and the people around him/her.

It is possible that governments would have to build rehabilitation centres and train more health personnel to cater for people who would develop substance abuse related psychological disorders. Already psychiatric patients some of whom are users of cannabis are treated and medicated for free under the National Health Insurance Scheme. Yet we receive reports that people smoke and gradually distort their reality, become violent, beat up their spouses and children and take up guns to rob.

It is significant to re-hush the fact that the global secret of marijuana trade is fetching people huge sums of money that nations have not paid attention to. Noticeable examples from USA, Canada and Ghana have already been discussed in this paper. But for the intervention of the Ghana Police Service and Customs who are at our borders and check points as well as the Narcotic Board Control, several people who are into weed farming and trading would have managed to easily do their business without any encumbrances and make lots of money out of the trade at the expense of the entire nation. In spite of some arrests made by the police, customs and the Narcotics Control Board, it is important to conclude that the unreported cases of those who continue to engage in the cannabis trade could be overwhelming. Some clinical and therapeutic uses for marijuana have been found. For instance, it is an effective anti-emetic agent for patients undergoing cancer chemotherapy, effective in treating AIDS related wasting, decreases depressive symptoms reduces neuropathic pain, improves appetite and caloric intake especially in patients with reduced muscle mass and may relieve spasticity and pain in patients with multiple sclerosis. These are *dosage-regulated* medical use. It can be envisaged that Ghana would pay attention to these areas.

Could the syllabi of our basic and second cycle schools contain more proactive lessons on alcohol and drug abuse and its effects? (Most clients report starting alcohol and drug use at these levels). Could the NACOB be more proactive in their education as well as operations to arrest and prosecute drug peddlers in collaboration with the security agencies? Could the Ghana Health Service employ *more* Clinical Psychologists to help educate and treat people with substance use disorders and the other myriad psychological disorders? (That was one essence for the Ghana Psychological Act). Drug addiction is more of a behavioural problem – Clinical and Health Psychologists *know* how to treat that! Could our district and regional hospitals have Psychiatric Units for psychosocial interventions? Could community centres and sports facilities be established to serve as alternatives to drug use for the youth? When substance users do not receive early treatment and education, they become physically and psychologically dependent and develop intolerance. At best, they only influence others to join them. Could assistance be given to agencies and NGOs such as the Chosen Rehabilitation Centre and the many others who are striving to educate and rehabilitate alcohol and drug addicts to become important members of the community?

Dr. Gordon Donnir, has warned Legalizing marijuana use in Ghana is “bad”. The penalty can be predicted. When marijuana is legalized, crime rates will increase, divorce rate will double, prison population will triple and drug-related mental illness will quadruple in the next decade.⁷² However the article postulates that negatives associated from the use of cannabis is emanates from THC so the reduction of it may rather make the argument for it legitimization in countries like Ghana less harmful than it has been portrayed. It further confirms that the Global Cannabis trade is bringing lots of financial gains to those who are peddling the weed at the expense of nations or governments. In Ghana the police in Kumasi, Accra, Sunyani/domaa and the Volta region have put up a stiff fight against the cannabis trade. Irrespective of the efforts of the narcotic Control Board, the police service and the customs at our borders, weed farms are increasing in Ghana, Jamaicans and persons from the West-Africa sub-region have been accused to be collaborating with indigenous Ghanaians in the venture. Peddlers and users have become innovative and now we have marijuana bitters in Ghana.⁷³ Nonetheless, interviewees have confirmed that the mixture of marijuana with other substances including marijuana has persisted.

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⁷⁰ Richard Appiah, End of debate: Let marijuana remain illegal (sourced) 24th March, 2014

⁷¹ Richard Appiah, End of debate: Let marijuana remain illegal (sourced) 24th March, 2014

⁷² Richard Appiah, End of debate: Let marijuana remain illegal (sourced) 24th March, 2014

⁷³ Kafui Gati, Thirty Acre Wee Farm Destroyed at Liati-Sogba, Ghanaian Time, January 23rd, 2014, Jamaican, six others nabbed for Wee farming, Ghanaian Times, October 5th, 2012, Mssive Wee Cultivation, Graphic Nsempe, March 29th, 2010

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