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Use of Anabolic Androgenic Steroids: Performance Enhancement or Health Hazard?

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Abstract:- Anabolic androgenic steroids (AAS) are synthetic medications used in fitness, medicine, and sports that replicate the effects of androgens in the body, such as testosterone. They are used to treat AIDS, some malignancies, and low testosterone. It is critical for society and medicine to comprehend the advantages and disadvantages of AAS. Steroids enhance androgen receptors, which inadvertently result in stronger muscles and higher workout intensities. Additionally, they activate the brain via the growth hormone-insulin-like growth factor-1 axis and a variety of neurotransmitters. Cycles of "cycling," "pyramidation," or "plateauing," in which the body progressively reduces the cycle without abruptly terminating it, is common pattern of steroid misuse. Additionally, "plateauing" with AAS is done to avoid resistance. The majority of consumers of AAS are bodybuilders and elite athletes, but the drug's widespread use among men has raised questions about possible health risks and self-prescription. AAS consumption should be known to medical practitioners for a number of reasons, such as self-prescription and suggestions from non-medical personnel.

Keywords:- *Steroids, Anabolic Androgenic Steroids, Testosterone, Athletes, Bodybuilding, Gym, Fitness.*

I. INTRODUCTION

The topic of Anabolic Androgenic Steroids (AAS) frequently elicits debate, intrigue, and apprehension in equal measure within the sports, fitness, and even medical domains. These substances, which can be intentionally synthesised or produced from testosterone, are used in everything from recreational bodybuilding to elite sports to medical procedures. But there are many difficult issues surrounding their employment, including those pertaining to fair competition, ethics, and health.

Few effective preventative techniques are known, despite several governments' on-going attempts to outlaw the usage of anabolic androgenic steroids (AAS) and other performance-enhancing and image-enhancing drugs.[1]

Synthetic drugs called anabolic steroids are made to impersonator the effects of androgens—the hormones that are found naturally in male sex—in the body. Of all the androgens, testosterone is the most common. In order to stimulate the development of skeletal muscle and male secondary sexual characteristics, doctors employ anabolic steroids to treat conditions such as low testosterone (male hypogonadism), some cancers, and acquired immunodeficiency syndrome (AIDS).[2]

Furthermore, anabolic drugs usually enhance the amount of androgen receptors, allowing for higher exercise intensities and unintentionally producing bigger and stronger muscles. They may also have a stimulatory impact on the brain through their diverse activities on various neurotransmitters in the central nervous system, their antagonistic effects on glucocorticoids, and their stimulation of the growth hormone-insulin-like growth factor-1 axis.[3]

The use of steroids is frequently done in cycles known as "cycling." This includes taking several doses of steroids over a certain period of time, pausing, and then restarting. Persons who abuse steroids also frequently termed as "stack" the medications, which are the practice of using two or more distinct anabolic steroids, combining these injectable and/or oral forms, and sometimes even taking substances suggested for veterinary use.[4]

Another method of steroid exploitation is called "pyramidation," which involves taking the drug in cycles, usually 6 to 12 weeks and gradually reducing the cycle without starting and stopping suddenly. At the beginning of the cycle, patients usually start with a low dose of the drug and then gradually intensify the dose. In second half of the cycle, it gradually reduces the dose to zero. Sometimes after the second cycle the training continues without medication. Steroid abusers believe that the pyramid gives the body interval to adjust with higher doses and drug-free cycle also gives the body interval to restore back to its hormonal systems.[5]

It is also possible to use a method called "plateauing", where steroids are increased, stacked or replaced by different steroids to avoid the development of resistance.[6]

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Elite sportsmen and bodybuilders looking to enhance performance were the main users of AAS outside of medicine. Over the past three decades, AAS usage has been increasingly widespread among males. Millions of them, many of whom have no connection to sports, take it more often to enhance their physical look and strength. Medical professionals should be aware of the use of AAS for numerous significant reasons, including self-prescription and suggestions from non-medical staff based on actual experience. It alters the hypothalamic-pituitary-target organ axis, resulting in a disease that needs to be treated. Adverse effects might send users to the Emergency Room.[7]

Anecdotal evidence points to a large (20–90%) athlete population that uses anabolic steroids, especially in elite amateur and professional sports. Scientific research, on the other hand, shows that consumption is uncommon and seldom exceeds 6%. Scientific research findings indicate that the use of anabolic steroids decreases over time from high school through college and beyond; yet, anecdotal data suggests the contradictory pattern. But should untested testimony from people closest to the issues—athletes and coaches, drug-testing supervisors, and journalists who follow leads and double-check sources—in the case of anabolic androgenic steroids—which is a stigmatised and illicit substance—be discounted as unreliable? Not if a full picture is to come to light.[8]

In the upcoming years, it is important to have emphasis on proper knowledge regarding AAS. A research was carried out to determine the frequency of using muscle-building supplements, as well as how performance and appearance aspects connect to the usage of these supplements and positive views about anabolic androgenic drugs. Over the last three months, 12.7% of the trial reported taking supplements meant to build muscle. Supplement usage for muscle gain was associated with both appearance and performance-related characteristics, such as weight training and mesomorphic ideal internalisation. One appearance-related characteristic that was associated with positive views towards anabolic androgenic drugs was body dissatisfaction. The study found that in order to enhance standard clinical practice in this area, the misuse of AAS by both athletes and non-athletes should be assessed, as well as its detrimental effects.[9]

A study was conducted to determine how many male and female middle school students take steroids, as well as to investigate their attitudes and perception regarding these substances. The percentage of eligible responses was 82%, with 965 out of 1175. According to the results, 2.7% of middle school students overall—2.6% of male students and 2.8% of female students—reported taking steroids. In comparison to nonusers, 47% of steroid users believed that steroids made muscles bigger, and 58% versus 31% believed that steroids made muscles stronger. 31% versus 11% believed that the use of steroids enhances sports performance; 13% and 23%, respectively, believed that steroids improve one's appearance; 23% as opposed to 9% knew someone in their age group who was presently using steroids; 38% against 4% said they had been requested to take steroids; 54% versus 91% believed that steroids were unhealthy; and 35% versus 2% said they thought of taking steroids in the future. Weight training and the internalisation of the mesomorphic ideal have been connected to the use of muscle-building supplements in relation to look and performance. Positive sentiments towards anabolic androgenic drugs were only correlated with one appearance-related trait, namely body dissatisfaction.[10]

A study was done to evaluate the response of men using AAS. 31.69 ± 10.09 years was the regular participant age. United States citizens made up more than half of the respondents (n = 1271, 53.3%). Improving beauty (n = 1959, 82.2%), strength gain (n = 1192, 50%), and self-esteem/body image concerns (n = 712, 29.87%) were among the reasons people used AAS. Physicians' understanding of AAS was assessed poorly by participants (4.08 ± 2.23). The majority of individuals (n = 1338, 56.1%) did not disclose their use of AAS to their medical professionals; of those who did, 55.30% (n = 579) said they felt discriminated against because of their usage. 60.22% (n = 663) of the 46.16% (n = 1101) who attempted to stop using AAS were not successful. The early initiation of AAS usage, supraphysiologic levels taken, and the stress of body image issues that are often present are obstacles in the managing the use of AAS. Lack of physician training, low quitting rates, and mistrust of healthcare providers.[11]

A cross-sectional study was conducted in Quetta, Pakistan, aimed at the knowledge, attitudes, and practices of male gym patrons about the usage of AAS. 841 out of the 866 participants in the survey had a 97.1% total response rate. With 556 (66.1%) having a bachelor's degree, the majority of respondents (501, 59.6%) were in the 28–37 age range. More than 60% of those who answered the question were aware of the term "anabolic steroids" and their usage in bodybuilding. The media (176, 30.2%) was the second-best source of information on anabolic steroids, behind friends and gym partners (289, 49.7%). Of those surveyed, 522 (60.8%) admitted to using anabolic steroids; the most common suppliers of these hormones were friends (244, 47.6%) and internet retailers (1162, 31.6%). A total of 549 (66.4%) respondents said that using anabolic steroids for bodybuilding was "safe." Outcome of this study provided precise and considerable evidence of the high incidence of AAS use among the gym athletes. Educating the crowds, limiting the access to AAS and strict implications of policies are the need of the hour to decrease the prospect negative repercussions of AAS abuse.[12]

In a few gymnasiums in an Indian smart city, a cross-sectional study was carried out with the use of a questionnaire. Between June 2015-16, the research was held. Findings indicated that 74 individuals utilised AAS out of the 84 bodybuilders who were contacted. Average age of 26.5 + 0.55 years was shared by all male users. With 66.2% (49) of the abusers being single, the average age at which AAS abuse started was 23 years. An injectable was chosen by 85% (63) of respondents. Training for abuse had an impact on five out of seven abusers (70 percent). Nandrolone decanoate had the highest rate of abuse (55.4%). A legal prohibition on steroids was unknown to 73% of respondents. Among young bodybuilders, ASS usage occurred rather often. Even with

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awareness of the unfavourable outcomes, nothing prevented it. Coaches have a big impact on abusers. AAS accessibility should be hindered as much as possible.[13]

A study was conducted to assess Self-Perceived Weight and Anabolic Steroid Misuse among US Adolescent Boys. The occurrence of abusing anabolic androgenic steroids was 12.6% among boys who perceived themselves as very underweight or lean, 11.9% for boys who perceived themselves as very overweight, in disparity to 3.8% for boys who perceived themselves as having the right weight. The likelihood of abusing anabolic androgenic steroids was shown to be much higher in boys who thought they were either underweight or extremely overweight than in boys who thought they were the appropriate healthy weight.[14]

A cross-sectional study examined the use and attitudes of anabolic-androgenic steroids among male members of Kuwaiti fitness centers. Response rate for AAS usage was 22.7%. The age group of 19–25 had the greatest rate of first-time AAS use (468.8%). When compared to non-users, the majority of AAS users (70.5%) thought that taking AAS was the only way to have an adequately muscular physique, while a tiny minority (6.8%) thought that using AAS would have serious negative effects on health. Significant knowledge regarding the side effects of AAS was there in only 18.2 % of patients who used it. Rather than raising knowledge of the negative consequences of AAS, a successful campaign to lessen the burden of AAS usage should concentrate on modifying attitudes towards AAS.[15]

A study was conducted to assess the perception and usage of anabolic androgenic steroids in non-athlete students. Among a group of 485 nonathlete college students at a major metropolitan university, it was found that 42 participants (9%) reported using AAS, with 37 being males and 5 females. It's interesting to note that freshmen used AAS the least, at 7%, while seniors used it the most, at 36%. Between one and five AAS users were known to 34% of nonusers and 41% of users, respectively. Furthermore, according to 36% of the sample, 5% to 10% of college students who were not athletes utilised AAS. The reasons for AAS use were quite different, with some individuals reporting friends using (7%), urge to enhance their physical appearance (45%), and yearning to increase physical performance (48%). The findings of this study, AAS are an esoteric behaviour that affects college students who are not athletes. College freshman utilised AAS the least, but sophomores, juniors, and seniors used it more frequently.[16]

A quantitative research to assess perceptions and attitudes toward androgenic-anabolic steroid use. A range of actions pertaining to body image were documented. The age groups were clearly distinguished from one another by emerging themes. When asked about AAS use, older individuals saw it more as an athletic phenomena, such as with performance enhancement, whereas younger subjects highlighted power, control, body image, and narcissism. All the groups agreed that the ideal male body, as portrayed in the media, is becoming "superhuman" and unachievable without the use of chemicals. Complementing national data on AAS trends with an understanding of attitudinal viewpoints may be helpful. Subsequent research endeavours may facilitate the cooperation of coaches and associated health practitioners with national organisations and foundations, as well as with each other, to develop more suitable approaches to handle this expanding athletic and public health issue.17

About 2,200 junior and senior high school students in the Salt Lake City, Utah metropolitan area were given a survey to find out how common it was for them to take anabolic-androgenic steroids. In addition, gender, involvement in sports, and other illicit drug usage were identified by the survey. 1,907 questionnaires were returned, which equates to almost 87% of individuals that were polled. Within all-inclusive study population, 3.3% of people used steroids. Boys (4.0%) used steroids more frequently than females (1.4%), and those who engaged in strength training activities (5.0%) used steroids more frequently than those who did not (1.6%). Compared to non-steroid users, current or previous AAS users were more likely to have used marijuana, used cocaine, or drunken alcohol. When compared to non-users, steroid users showed less worry for the potential health hazards of using steroids and were more permissive of their usage in sports.[18]

To assess Knowledge, Attitude and Practice of Anabolic Steroids Use Among Gym Users in Al-Ain District, United Arab Emirates, a research study was conducted. In Al-Ain city, the survey found that a relatively high percentage of gym patrons (22%) misused AAS. In comparison to other groups, the use of AAS was statistically substantially greater among UAE citizens, body builders, weight lifters, and users of commercial clubs. Moreover, even though non-users were aware of the adverse effects of AAS, 7% of them planned to use it in the future. Of the sample as a whole, 39% had been requested to use AAS at least once in their lives, and 60% thought it was simple to get AAS.. Of great concern is that 7% of the non-users of AAS were planning to use it in future while 17% were not yet sure about this. Furthermore, 79% of the users had personal trainers, vs. 58% of the non-users. Moreover, 77% of the users had been invited at least once to use it vs. 28% of non-users. Of the total sample, 50% reported that their main source of AAS knowledge were friends, followed by the media (35%), trainer (22%), health care professional (13%), the internet (10%) and the fitness magazines (9%). However, only 70% of the study sample reported that the source of knowledge had explained the AAS hazards. Most of the participants (68%) agreed that the health authorities should be informed about people using AAS. Furthermore, abusers believed that using AAsS had more advantages than disadvantages. Programmes aimed at raising public awareness must be implemented in order to prevent the problem from spreading.[19]

A assess the prevalence and correlates of using steroids for the purpose of gaining muscle among adolescent males and females. Males (5.4% vs. 2.9% of females), non-Caucasians (particularly Hmong, a subgroup of Asian Americans), and middle school students (as opposed to high school students) were more likely to use steroids. Higher rates of depression and suicidal thoughts, lower health-related

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knowledge and attitudes, greater participation in weight- and shape-focused sports, higher levels of parental weight-related anxiety, higher rates of disordered eating and substance abuse—all of these associations have been linked to male steroid use. Although generally the data showed a similar trend, the relationships between steroid usage and other factors were less consistent among females.[20]

A cross-sectional study to evaluate the frequency of AAS and ascertain gymnasts' knowledge of it in the western province of Riyadh. n=363 of the 400 gymnasts that took part in the survey had their questionnaires completed. Twenty-five percent (n = 89) of the respondents used AAS. Primarily, testosterone was utilised, with methandrostenolone and stanozolol following closely behind. Online shopping (45%) and gym instructors (22.5%) were the main sources of AAS. There was no significant difference (p=0.076) in the awareness between 74% of AAS users and 55% of non-users about the insufficient impression of AAS idea. The majority of gymnasts have a minimal awareness of AAS.[21]

II. CONCLUSION

Finally, this article emphasises how vital it is to comprehend androgenic anabolic steroids (AAS) in the context of both society and medicine. By thoroughly examining their impacts, risks and possible advantages, we have shed light on the intricate details related to the usage of AAS. By increasing public awareness of these drugs, legislators, and medical professionals will be better equipped to make judgements about their usage. In the future, more studies and guidance are needed to reduce the possible risks connected to AAS and encourage safer behaviours in sports, health, and other fields.

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