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A PRE-EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF INFORMATIONAL BOOKLET ON HEALTH RISKS WITH ANABOLIC ANDROGEN STEROIDS USAGE IN TERMS OF KNOWLEDGE AND ATTITUDE AMONG ADULTS ATTENDING SELECTED GYMNASIUMS OF DELHI.

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Abstract: This study aims to assess the effectiveness of an information booklet regarding health risks with the usage of androgen anabolic steroids in terms of knowledge and attitude among adults visiting gymnasiums. Theory model. To assess the effectiveness of an information booklet Ludwig Von Bertalanffy's The General System Theory (1968) is used. Also pre-experimental design was conducted by using a quantitative research methodology, with one group pre-test and post-test design. For the very purpose monthly time series has been arranged from Dec 2023 to Jan 2024. The analytical framework contains.

Keywords: AAS, Information Booklet (IB), Adults visiting gymnasiums.

INTRODUCTION

The term "anabolic-androgenic steroids"(AASs)refers to synthetic hormones that mimic testosterone. The testes contain Leydig cells that produce testosterone, the male gonadal hormone. A deep voice and facial hair are two examples of the secondary male traits that develop and mature due to this hormone. There is an anabolic effect in addition to the androgenic. Anabolic-Androgenic Steroids is the correct name for these substances. Because of this, "Anabolic" refers mostly to muscle-building while "Androgenic" is associated with stereotypically masculine traits. Male hypogonadism, osteoporosis, severe burns, HIV-induced muscle wasting, starvation, renal

and hepatic failure, and menopausal women are among of the illnesses that can benefit from AASs as a hormone replacement treatment.[1] German soldiers are said to have used anabolic steroids for the first time in World War II to try to gain more power and ferocity[2].Numerous research has shown the detrimental physical and mental side effects of anabolic steroids since their non-therapeutic use started. Despite multiple proven negative health concerns, the use of anabolic steroids is more common than ever[3].

The use of AAS is also forbidden by the National Collegiate Athletic Association and the International Olympic Committee (IOC).Most positive pee doping tests contain AAS, according to the International Olympic Committee.[4,5] People who took part in AAS tended to be young, healthy, educated, and active. It could seem that this health-conscious lifestyle is at odds with the likely issues associated with AAS. Nevertheless, it appears that most people who use AAS do so responsibly. They take precautions including using clean injection techniques, eating a healthy diet, getting regular blood testing, and cycling on and off AAS as needed.[6] A dose-dependent hypertrophy resulting from an increase in nuclear number and an increase in the cross-sectional area of muscle fibres is responsible for the testosterone-induced augmentation of muscle size and strength. It appears that the rise in muscle protein synthesis caused by testosterone is responsible for these morphometric changes. It raises bone mineral density and improves collagen production as well. One possible mechanism by which the androgen receptor controls the build-up of DNA necessary for muscle growth is via regulating the transcription of target genes. Additional anabolic effects that AAS may have include a psychedelic impact on the brain, inhibition of glucocorticoids, and enhancement of the IGF-I axis, among others.[7]

NEED OF THE STUDY

The rising tide of AAS abuse is calling for awareness campaigns to inform young people and their adults about the dangers of these substances and how they can damage their bodies [8]. As it is, AAS are used by athletes and others at supraphysiological levels for performance enhancement and muscular growth. [1] Additionally, serum aminotransferase levels have risen significantly, and there have been multiple cases of hepatic impairment. Furthermore, research has connected AAS usage to mental health problems including suicidal ideation and violent behaviour. People in Saudi Arabia now have more favourable views of fitness and bodybuilding, which may explain the dramatic rise in the country's gym population in recent years. The behaviours and knowledge of gym members regarding this substance, however, have been the subject of comparatively little investigation. [9]

REVIEW OF LITERATURE

In this the review of literature has been divided into 3 categories are as follows:

1.Literature on the health concerns associated with AAS use.

Amsterdam Van Jan et al.[10] reversible and permanent changes, such as cosmetic effects and hepatotoxicity, can be caused by AAS usage, according to a comprehensive review. Due to its effects on well-being and withdrawal symptoms, AAS may cause addiction in some individuals, even if it does not have a strong euphorogenic effect. Abuse of AAS has been associated with heightened hostility and wrath, and in rare cases, violent outbursts. Adverse symptoms from AAS abuse seem to occur rarely and infrequently, and lesser side effects go away when you stop taking the drug.

Aaron L et al. [11] using 140 male weightlifters,86 of whom were regular users of androgenic anabolic steroids and 54 of whom were not, researchers conducted a cross- sectional cohort study to examine the potential long-term effects of AAS usage on the cardiovascular system. Echocardiography and CT angiography were used in the study to find that compared to non-users, AAS users had greater plaque volumes in the coronary arteries and worse left ventricular systolic and diastolic function. The LV function of people who were still taking AAS was much lower than that of people who had stopped taking the drug. In addition, the study found that the risk of coronary

atherosclerosis increased with the duration of AAS use. These results raise concerns about the potential detrimental consequences on cardiovascular health from long-term use of AAS, which could be a threat to public health

2.Literature on knowledge and attitudes of health concerns associated with AAS use.

Bhaduriya P and Arora S [12] examined the knowledge, attitudes, and practices of individuals regarding the usage of androgen anabolic steroids in a descriptive study that took place at the Evolve Health Club in Dwarka, New Delhi. We sent out a standardised questionnaire to get data from 100 people. A total of 55%of people who took the study knew what anabolic steroids were, and another 45%had a moderate comprehension. Even though 65%of people who took the survey had a somewhat positive outlook,45%were discovered to be using steroids. Of those who used steroids,80%did things that could hurt them, while just 20%did things that were safe. The need of public health campaigns aimed at increasing knowledge, comprehension, and behaviour change about anabolic steroids is highlighted by the study.

Hosseini,Mehry et al. [13] Researchers in Kermanshah set out to learn how common anabolic steroid misuse is, how well female bodybuilders understand their risks, and what they think about the topic overall. Statistics show that 36.66 percent of sportsmen use anabolic steroids, mostly to increase strength and muscle mass. There was a notable association between AAS usage history in sports, attitude, and awareness, and a substantial negative correlation between attitude awareness, educational level, and the incidence of AAS use. Research like these highlights the need for education campaigns targeting medical doctors and sports scientists about the risks of AAS usage.

3.Literature on the usefulness of information booklets in improving understanding and attitudes towards AAS.

Jalilian and Farzad [14] Researchers in Iran set out to find out how effective a preventative intervention was in discouraging male gym rats from using anabolic androgenic drugs. This study employed a longitudinal randomised pre-test-post-test series control group design with 120 male gym members in both the intervention and control groups. The theory of planned behaviour served as the basis for this research. Significant improvements in the intervention group's knowledge of AAS adverse effects, attitudes towards AAS usage, and intentions to avoid these drugs were shown by the results. In addition, the intervention proved that when gym members and teenagers are given comprehensive techniques to fight AAS abuse, it can lead to beneficial outcomes including encouraging healthy habits and reducing AAS usage.

June Nutter, Betty Rauhe et al. [15] The journal claims that anabolic steroids have become increasingly popular among athletes at all levels, including collegiate, high school, and junior high pupils. The dangerous effects of anabolic steroids on the body and mind necessitate their inclusion in school health programmes. The effectiveness of various teaching activities and strategies aimed at discouraging the use of anabolic steroids remains largely unknown. Not only is there helpful guidance for educational programme planners, but there are also several examples of activities and strategies that may be modified to suit various age groups. Because of their versatility, case studies are highly prized for their potential application to various health-related topics. Combining several of the activities with other academic fields is a great idea. It is important to educate adults, especially parents, school authorities, counsellors, coaches, athletic trainers, and medical experts like doctors and school nurses, about the risks.

RESEARCH METHODOLOGY

The present study was designed to assess the effectiveness of an informational booklet on health risks with anabolic androgen steroid usage in terms of knowledge and attitude among adults visiting selected gymnasiums in Delhi. This study uses a quantitative technique to achieve its objectives. It aimed to assess the effectiveness of the information booklet regarding health risks with the usage of androgen anabolic steroids among adults visiting gymnasiums. This study used a pre-experimental design(one group pre-test and post-test)to evaluate the impact of a booklet on the knowledge and attitude of adults visiting specific Delhi gyms regarding the dangers of anabolic androgen steroid usage. **Independent variable.** The information booklet about the health dangers of AAS usage is considered an

independent variable in this study. **Dependent variable.** Adults awareness of, and stance towards, the potential health hazards associated with AAS use is the dependent variable in this research. **Socio-demographic variables.** socio-demographic parameters such as age, gender, religion, education, personal income, marital status, length of AAS usage, frequency of AAS consumption, information sources, workout duration, and gym attendance are taken into account.

POPULATION, SAMPLE, TECHNIQUE AND CRITERIA

The population of the current study consisted of adults aged 18 to 40 who visited gymnasiums. The current study's sample consists of adults aged 18 to 40 who visit gymnasiums in Arjun Nagar Kotla-Mubarakpur and South Extension Part-I, Delhi. In this present study, a convenient sampling technique was used to draw the sample. One hundred persons, evenly split across sexes, were surveyed at gyms in different parts of Delhi for this study. Adults from 18-40 years visiting selected gymnasiums of Delhi. Subjects who are willing to participate in the study.

DATA COLLECTION AND VALIDITY- RELIABILITY

The study's aims and conceptual framework informed the development of a data gathering instrument. In order to gather information, we used a structured knowledge questionnaire to find out how much adults knew about the potential health hazards of AAS use, and a structured attitude scale to find out how they felt about those same dangers. To ensure the content validity of the tool used in the present study, it was given to seven experts. Experts were selected from the field of medical surgical nursing from different departments like cardiology and endocrine. Experts were chosen based on their clinical expertise, experience, qualifications and interest in the problem area. The reliability of the structured knowledge questionnaire was established by using Kuder Richardson Formula which was 0.7 by split-half method, and the reliability of the structured attitude scale was established by using Cronbach's alpha formula which was 0.90.

THEORITICAL FRAMEWORK

The General System Theory by Ludwig Von Bertalanffy (1968) can be applied to various disciplines, including nursing. It views organizations and systems as complex entities that interact with their environment and are constantly changing. In this study, the adults visiting gymnasiums can be considered as the components of a larger system that is influenced by external factors. The information booklet can be seen as an intervention that aims to improve the knowledge and change in attitude of adults visiting gymnasiums regarding health risks with the usage of AAS.

The general system theory can help to explain how changes in one component of the system can affect the other components and the system as a whole. Therefore, it is an appropriate conceptual framework for this study. The general system theory includes the ideas of input, throughput, output and feedback. The system takes in input, which is then transformed or processed through the system(the throughput process) to produce an output. The output is then delivered to the external environment. Feedback is the process of information being returned to the system, which can influence future inputs and throughput. The theory suggests that open systems are influenced by their environment and are in a continuous cycle of input-throughput-output-feedback.

Input Any data, substance, or energy that is introduced into a system is called an input. Adults knowledge and attitude towards health concerns associated with AAS use is an input in the present study. The input is a structured knowledge questionnaire and a structured attitude scale measuring the subject's level of preparedness for the test in relation to the potential health concerns associated with AAS use.

Throughput

Once the system has processed the input, it is then suggested in a way that will benefit the-system. The term for this change is throughput. The production and distribution of a pamphlet detailing the potential health hazards associated

with AAS use is considered throughput. The creation and distribution of an AAS information pamphlet constitute throughput in this investigation.

Output

Results from this study will show how adults' knowledge and attitudes about AAS changed after receiving the information booklet, as measured by their post-test scores on these measures.

Feedback

It should be noted that there are alternative ways to gather feedback, such evaluating and monitoring the system's performance or outcomes. Evaluation of the information booklet's usefulness through post-test scores and monitoring of the application of knowledge received by adults visiting gymnasiums allowed for the acquisition of feedback in the present study. Collecting the thoughts and experiences of the nursing staff on the information booklet's usefulness and practicality is another way to get feedback. Even though feedback isn't directly addressed in the study design, it should still be taken into account for the system's overall efficacy and improvement. Criticism is omitted from this research.

ANALYSIS AND STATISTICAL INTERPRETATION

To analyse the data, descriptive and inferential statistics were applied. The following sections comprised the organization of the data.

1. SECTION I: Findings related to demographic characteristics of samples.

Table 1

n=100

S.NO.	SAMPLE CHARACTERISTICS	FREQUENCY	PERCENTAGE
1.	Age(in years):	28	28%
	a. 18-20 years	68	68%
	b. 21-30 years	4	4%
	c. 31-40 years		
2.	Gender:		
	a. Male	80	80%
	b. Female	20	20%
	c. Transgender	0	0
3.	Religion:		
	a. Hindu	93	93%
	b. Muslim	3	3%
	c. Sikh	3	3%
	d. Christian	0	0
	e. Others	1	1%
4.	Marital status:		
	a. Single	28	28%
	b. Unmarried	60	60%
	c. Married	12	12%
5.	Educational Status:		
	a. Primary or middle school	0	0
	b. High school	9	9%
	c. Up to 12^{th} class	31	31%

	d. Diploma	12	12%
	e. Graduate	48	48%
	f. Post graduate & above	0	0
6.	Personal monthly income (in Rs):		
	a. <30,000	57	57%
	b. 30,001-50,000	15	15%
	c. 50,001-80,000	10	10%
	d. 80,001- 1 lakh	4	4%
	e. >1 lakh	14	14%
7.	Sources of information regarding AAS:		
	a. Friends	36	36%
	b. Gym trainers/ coach	38	38%
	c. Pharmacists	2	2%
	d. Social networking sites	22	22%
	e. Others	2	2%
8.	Duration of visiting gymnasium:		
	a. 6mo-1 year	57	57%
	b. 1.5-2 years	30	30%
	c. 2.5-5 year	12	12%
	d. Over 5 years	1	1%
9.	Duration of workout:		
	a. <30 min	25	25%
	b. 60 min	47	47%
	c. 1.5 hours	20	20%
	d. >2 hour	8	8%
10.	Often visits gymnasium:		
	a. Once daily	20	20%
	b. Twice daily	8	8%
	c. Once in a week	1	1%
	d. Twice in a week	8	8%
	e. 3 or more times in a week	62	62%
	f. Occasionally	1	1%
11.	Heard about AAS:		
	a. Yes	33	33%
	b. No	67	67%
12.	Type of AAS consumption:		
	a. Oral	0	0%
	b. Injectable	3	3%
	c. None	97	97%
13.	Duration of AAS consumption:		
	a. 3 month	0	0
	b. 6 month	3	3%
	c. >12 month	0	0
	d. None	97	97%
14.	Frequency of AAS:		
	a. 2-4 weeks	3	3%
	b. None	97	97%

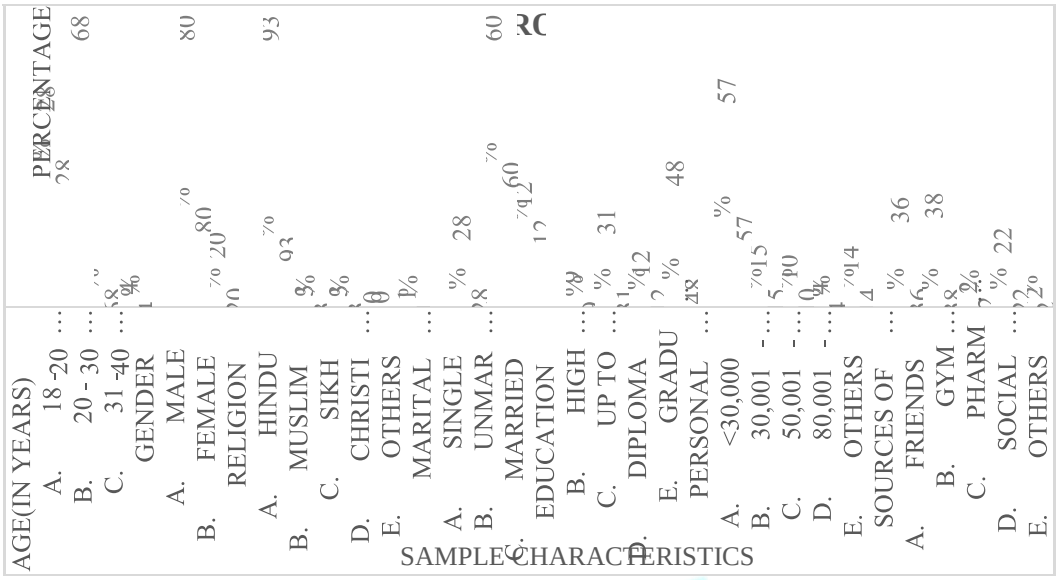

Figure 1

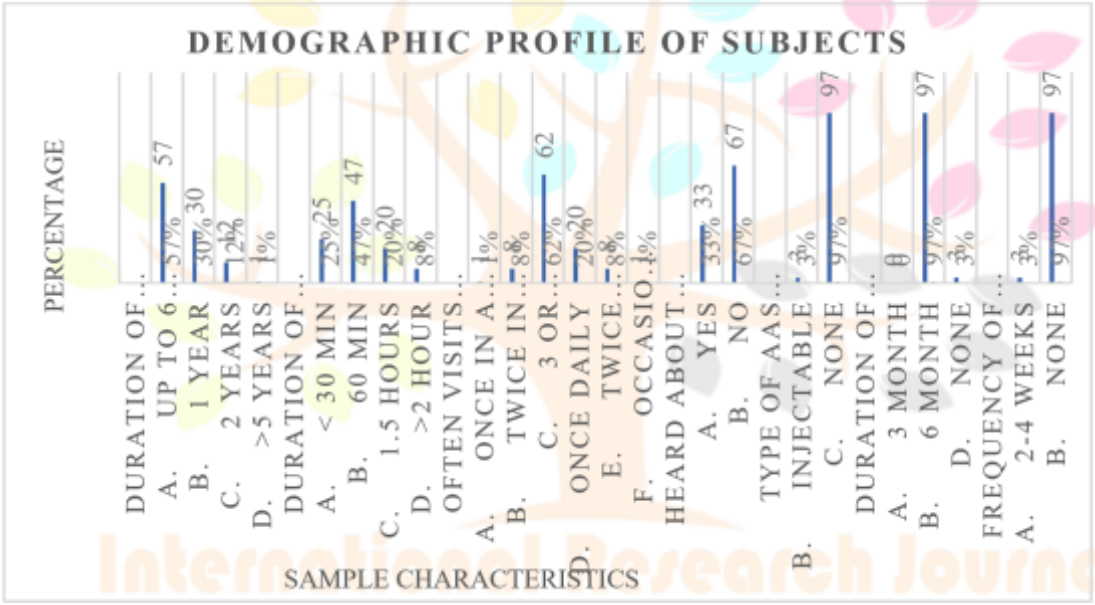

Figure 1a

2. SECTION II: Findings related to assessment of the knowledge regarding health risks with the usage of AAS among adults visiting gymnasiums in selected areas of Delhi.

Table 2

LEVEL OF KNOWLEDGE SCORE	RANGE OF SCORE	FREQUENCY	PERCENTAGE
Poor Knowledge	0-15	69	69%
Good Knowledge	16-30	31	31%
Total			100%

Frequency and percentage distribution of knowledge score of adults visiting gymnasium regarding androgen anabolic steroids (AAS).

The frequency and percentage distribution of adults visiting gymnasiums pre-test and post-test knowledge scores before and after delivery of an Information Booklet (IB) on androgen anabolic steroids (AAS).

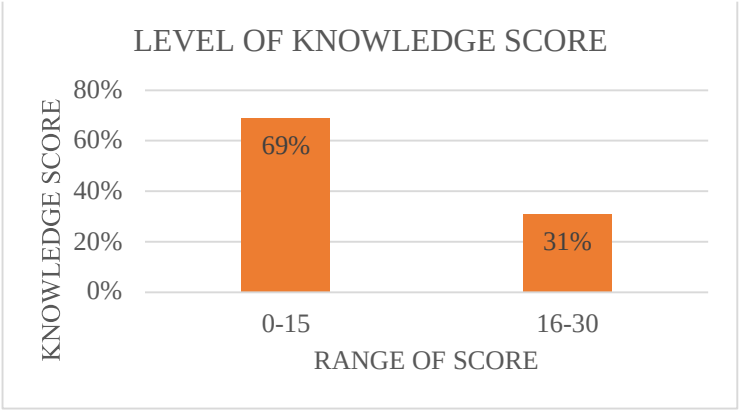

Figure 2 n=100

Knowledge test	Possible range of obtained knowledge scores	Range of obtained score	Mean	Median	Mean difference	Standard deviation	't' value	df
Pre- test	0-30	0- 22	13.15	13.00	10.3	4.879	**17.360***	99
Post- test		10-28	23.45	23.50		3.442		

The frequency and percentage distribution of attitude scores among adults visiting gyms considering the health hazards associated with the use of androgen anabolic steroids (AAS).

Table 3 n=100

LEVEL OF ATTITUDE	RANGE OF SCORE	Frequency	PERCENTAGE
Unfavourable attitude	20-40	13	13%
Favourable attitude	41-100	87	87%
Total			100%

The frequency and percentage distribution of adults visiting gymnasiums pre-test and post-test attitude scores before and after delivery of an Information Booklet (IB) on androgen anabolic steroids (AAS).

Figure 3a

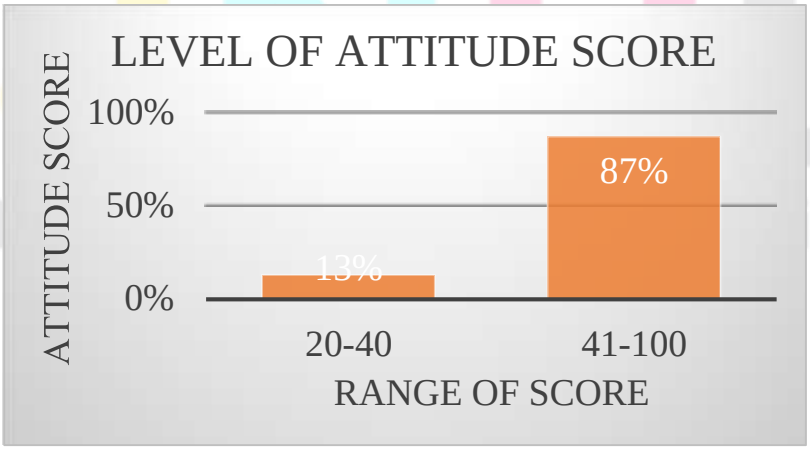

Table 4

n=100

Attitude test	Possible range of obtained score	Mean	Median	Mean difference	Standard deviation	't' value	df
Pre attitude	20-100	58.80	63.00	2.45	16.035	**1.430***	99
Post attitude		61.25	61.00		6.386		

3. SECTION III: Findings related to assessment of attitude regarding health risks with the usage of AAS of adults visiting gymnasiums in selected areas of Delhi.

Calculating Chi-Square value to determine adults pre-test knowledge score associations with selected demographic variable.

Table 4

n=100

Variables		No.	%	Knowledge score		Test applied	P value
				Poor	Good		
1. (years)	Age in						
a.	18-20 years	28	28%				
b.	20- 30 years	68	68%				
c.	31-40 years	4	4%				
				22	6	Chi Square	.356
				41	23		
				6	2		
2.Gender		80	80%				
		20	20%			Chi square	.665
a. Male				56	24		
b. Female				13	7		
3. Religion	Hindu						
	Muslim Sikh Christian	93	93%				
a.	Others	3	3%				
b.		3	3%	65	28		
c.		0	0				
d.		1	1%	2	1		
e.						Chi square	.517
				1	2		
				0	0		
				1	0		

4.Marital status a. Single b. Unmarried c. Married	28 60 12	28% 60% 12%	22 39 8	6 21 4	Chi square	.432
5. Education a. Primary or middle school b. High school c. Up to 12th class d. Diploma e. Graduate f. Post graduate or above	0 9 31 12 48 0	0 9% 31% 12% 48% 0	0 6 23 12 8 0	0 3 8 0 20 0	Chi square	**.039***
6. Personal monthly income a. ≤30,000 b. 30,001-50,000 c. 50,001-80,000 d. 80,001- 1 lakh e. >1 lakh	57 15 10 4 14	57% 15% 10% 4% 14%	49 9 4 1 6	8 6 6 3 8	Chi square	**<.001***
7. Sources of information regarding AAS a. Friends b. Gym trainers/ coach c. Pharmacists d. Social networking sites e. Others	36 38 2 22 2	36% 38% 2% 22% 2%	24 29 2 13 1	12 9 0 9 1	Chi square	.511

8. Duration of visiting gymnasium a. 6 mo- 1 year b. 1.5 - 2 year c. 2.5 – 5 year d. Over 5 years	57 30 12 1	57% 30% 12% 1%	43 19 6 1	14 11 6 0	Chi square	.258
9. Duration of workout a. ≤ 30 min b. 60 min c. 1.5 hours d. ≥2 hour	25 47 20 8	25% 47% 20% 8%	20 37 11 1	5 10 9 7	Chi square	**<.001***
10. Often visits gymnasium a. Once daily b. Twice daily c. Once in a week d. Twice in a week e. 3 or more times in a week f. Occasionally	20 8 1 8 62 1	20% 8% 1% 8% 62% 1%	13 7 1 6 42 1	7 1 1 2 20 0	Chi square	.509

11. Heard about AAS: a. Yes b. No	33 67	33% 67%	20 49	13 18	Chi square	.203
12. Type of AAS consumption: a. Oral b. Injectable c. None	0 3 97	0 3% 97%	0 1 68	0 2 29	Chi square	.175
13. Duration of AAS consumption: a. 3 months b. 6 month c. 12 months d. None	0 3 0 97	0 3% 0 97%	0 1 0 68	0 2 0 29	Chi square	.175
14. Frequency of AAS: a. 2-4 weeks b. None	3 97	3% 97%	1 68	2 29	Chi square	.175

4. SECTION IV: Findings related to the association between knowledge regarding health risks with the usage of androgen anabolic steroids (AAS)and demographic variables

Calculating Chi-Square value to determine adults attitude associations with androgen anabolic steroids (AAS).

Table 5

n=100

Variables	No.	%	Attitude score		Test applied	P value
			Unfavourable	Favourable		
1.Age in (years): a. 18-20 years b. 20- 30 years c. 31-40 years	28 68 4	28% 68% 4%	5 7 1	23 57 7	Chi Square	.661

2. Gender: a. Male b. Female	80 20	80% 20%	10 3	70 17	Chi square	.766
3. Religion: a. Hindu b. Muslim c. Sikh d. Christian e. Others	93 3 3 0 1	93% 3% 3% 0 1%	13 0 0 0 0	80 3 3 0 1	Chi square	.771
4.Marital status: a. Single b. Unmarried c. Married	28 60 12	28% 60% 12%	4 8 1	24 52 11	Chi square	.870
5. Educational status: a. Primary or middle school b. High school c. Up to 12th class d. Diploma e. Graduate f. Post graduate or above	0 9 31 12 48 0	0 9% 31% 12% 48% 0	0 4 3 4 2 0	0 5 28 8 46 0	Chi square	**.001***

6. Personal monthly income: a. ≤30,000 b. 30,001-50,000 c. 50,001-80,000 d. 80,001- 1 lakh e. >1 lakh	57 15 10 4 14	57% 15% 10% 4% 14%	8 0 1 0 4	49 15 9 4 10	Chi square	.201
7. Sources of information regarding AAS: a. Friends b. Gym trainers/ coach c. Pharmacists d. Social networking sites e. Others	36 38 2 22 2	36% 38% 2% 22% 2%	7 4 0 0 2	29 34 2 22 0	Chi square	**<.001***
8. Duration of visiting gymnasium: a. 6 month- 1 year b. 1.5 – 2 year c. 2.5 – 5 year d. Over 5 years	57 30 12 1	57% 30% 12% 1%	5 5 3 0	52 25 9 1	Chi square	.402
9. Duration of workout: a. ≤ 30 min b. 60 min c. 1.5 hours d. ≥2 hour	25 47 20 8	25% 47% 20% 8%	2 7 4	23 40 16	Chi square	.430

			0	8		
10. Often visits gymnasium: a. Once daily b. Twice daily c. Once in a week d. Twice in a week e. 3 or more times in a week f. Occasionally	20 8 1 8 62 1	20% 8% 1% 8% 62% 1%	3 0 0 0 10 0	8 52 17 8 1 1	Chi square	.654
11. Heard about AAS: a. Yes b. No	33 67	33% 67%	1 12	32 55	Chi square	**.037***
12. Type of AAS consumption: a. Oral b. Injectable c. None	0 3 97	0 3% 97%	0 0 13	0 3 84	Chi square	.497
13. Duration of AAS consumption: a. 3 months b. 6 month c. 12 months d. None	0 3 0 97	0 3% 0 97%	0 0	0 3	Chi square	.497

			0 13	0 84		
14. Frequency of AAS: c. 2-4 weeks d. None	3 97	3% 97%	0 13	3 84	Chi square	.497

FINDINGS AND DISCUSSION

Findings related to frequency and percentage distribution of adults visiting gymnasiums by their selected demographic variables.

With regards to age, the majority of the subjects were from the age group of 20-30 years 68(68%) followed by a minority of the subjects in the age group of 31-40 years 4(4%). With regards to gender, the majority of the subjects were males that is (80%) followed by female subjects (20%). With regards to religion, the majority of the subjects belonged to the Hindu community i.e., 93(93%) followed by a minority of the subjects belonging to others 1(1%). With regards to marital status, the majority of the subjects were unmarried 60(60%) followed by a minority of the subjects were married 12(12%). With regards to educational status, the majority of the subjects graduate 48(48%) followed by a minority of the subjects were from high school 9(9%). With regards to personal monthly income, the majority of the subjects had < 30,000 i.e., 57(57%) followed by a minority of the subjects having an income of 80,001-1 lakh 4(4%). With regards to sources of information regarding AAS, the majority of the subjects had information from gym trainers/coaches i.e., 38(38%) followed by a minority of the subjects having information from pharmacists and others 2(2%). With regards to the duration of visiting the gymnasium, the majority of the subjects who went to gymnasiums were up to 6 months 57(57%) followed by a minority of the subjects went from above 5 years 1(1%). With regards to the duration of workouts, the majority of the subjects had a duration of 60 min i.e., 47(47%) followed by a minority of the subjects had a duration above 2 hours 8(8%). With regards to often visiting the gymnasium, the majority of the subjects visit 3 times or more in a week i.e., 62(62%) followed by a minority of the subjects visiting once a week or occasionally 1(1%). With regards to hearing about AAS, the majority of the subjects didn't know about AAS i.e., 67(67%) followed by a minority of the subjects who knew about AAS 33(33%).With regards to the type of AAS consumption, the majority of the subjects didn't consume any type of AAS i.e., 97(97%), followed by a minority of the subjects consumed AAS in an injectable form 3(3%).With regards to the duration of AAS consumption, the majority of the subjects had no duration in AAS consumption i.e., 97(97%), followed by a minority of the subjects had duration in AAS consumption 3(3%).With regards to frequency of AAS, the majority of the subjects had no frequency of AAS i.e., 97(97%), followed by a minority of the subjects who had a frequency of AAS consumption within 2-4 weeks 3(3%). Findings on the frequency and percentage distribution of level of knowledge and attitude based on their pre-test and post-test knowledge and attitude score before and after administration of an information booklet on health hazards associated with the use of AAS among adults visiting gymnasiums.In the level of knowledge score, it showed that there was a lack of knowledge and awareness and after the intervention of an information booklet that is only 31% of adults had adequate knowledge whereas 69% of adults had inadequate knowledge regarding health risks with the usage of AAS. In the level of attitude score, it showed that 87% of adults show favourable attitudes on the other hand only 13% of adults show unfavourable attitudes towards health risks with the usage of (AAS). The above findings clearly states that information booklet has significant beneficial effect on the

level of knowledge among adults visiting gymnasiums regarding health risks with the usage of AAS in selected gymnasiums of Delhi. Hence the first object was met. Whereas in case of attitude there is no significant change in level of attitude among adults visiting gymnasiums regarding health risks with the usage of AAS in selected gymnasiums of Delhi. Findings related to association of pre-test knowledge and pre-test attitude scores regarding health risks with the usage of AAS among adults visiting gymnasiums with selected demographic variables like age, gender, religion, marital status, education, personal monthly income, sources of information regarding AAS, duration of visiting gymnasium, duration of workout, often visits gymnasium, heard about AAS, type of AAS consumption, duration of AAS consumption and frequency of AAS consumption. The fourth objective is to find the association between pre-test knowledge and pre-test attitude scores of adults visiting gymnasiums regarding health risks with the usage of AAS with their selected demographic variables such as age, gender, religion, marital status, education, personal monthly income, sources of information regarding AAS, duration of visiting gymnasium, duration of workout, often visits gymnasium, heard about AAS, type of AAS consumption, duration of AAS consumption and frequency of AAS consumption. To determine significant association between pre-test knowledge and pre-test attitude scores regarding health risks with the usage of AAS among adults visiting gymnasiums with selected demographic variables, a chi-square test was applied from the available data. The association of knowledge score with a demographic variable which is done by applying the chi-square test showed significance with only education, personal monthly income and duration of workout, whereas the association of attitude score with demographic variable showed significance with only education, sources of information regarding AAS and with heard about AAS with pre-test knowledge and pre-test attitude scores. Hence the null hypothesis was partially rejected and the research hypothesis was partially accepted. And the fourth objective of the study was met.

The present study shows a clear knowledge deficit among the participants regarding health risks associated with the usage of androgen anabolic steroids and a majority of the subjects had inadequate knowledge towards AAS usage, which is consistent with the study by Maha H[16] who found that out through cross-sectional study in Jeddah, that half of the subjects had a poor level of knowledge regarding AAS, and there was a lack of awareness about the health risks associated with AAS usage also they recommended national awareness program to prevent the side effects of AAS among users and non-users. These findings correlate with a similar study which was also a cross-sectional study conducted by Althobiti, Alqurashi et al.[17] said that all AAS users had inadequate awareness regarding the adverse consequences of AAS. A study done by Ahmed Bahri[18] also highlights present study findings, as it found that while Gym trainers/coaches as well as bodybuilders knew the benefits of AAS usage, their knowledge about the side effects was low. This study also found a significant association between AAS usage and higher education levels, indicating that awareness is independent of AAS use. The present study shows the attitude toward health risks majority of the subjects, (87%) had a favourable attitude and (13%) had an unfavourable attitude. The present study shows a clear knowledge deficit among the subjects regarding health risks associated with the usage of androgen anabolic steroids (AAS). It was seen that the information booklet was effective in increasing knowledge in selected gymnasiums of AAS usage. This indicates the usefulness of information booklets in increasing awareness and knowledge regarding AAS usage. A study was conducted by Jalilian et al.[14] shows the importance of educational interventions in increasing awareness and knowledge regarding the risks associated with AAS usage. The use of information booklets or lectures can be an effective method to improve knowledge and attitudes towards AAS usage. It is crucial to educate individuals about the harmful effects of AAS to prevent the misuse and abuse of these substances.

CONCLUSION

The study proved to be very essential as an information booklet regarding health risks with the usage of AAS plays an important role in enhancing knowledge among adults visiting gymnasiums. The level of knowledge increased regarding health risks associated with the usage of AAS in adults visiting gymnasiums who received an information booklet which is similarly helpful to increase knowledge regarding usage and side effects. The level of attitude regarding health risks associated with the usage of AAS in adults visiting gymnasiums could not increase due to the limited duration of time for data collection and also because of only - a one-time assessment of post-test knowledge and attitude regarding AAS. It was found there is significant association between pre-test knowledge and attitude scores regarding health risks associated with the usage of AAS among adults visiting gymnasiums with selected demographic variables such as age, gender, religion, marital status, education, personal monthly income, sources of

information regarding AAS, duration of visiting gymnasium, duration of workout, often visits gymnasium, heard about AAS, type of AAS consumption, duration of AAS consumption and frequency of AAS consumption.

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