Research Article

Regulatory Insight for Aphrodisiac Drugs

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Abstract

Background: Aphrodisiac drugs usage is increasing as a sexual enhancement resources among both men and women without a medical indication and efficacy. Recreational usage of aphrodisiacs has been correlated with elevated sexual risk activity, an increased risk for STIs, including HIV infection, and high levels of concomitant illegal substance usage. The aim of the research was to do the demographic study and various regulation associated with the class of drug.

Meterials and Methods: This was an online questionnaire-based analysis completed between March 2020 and May 2020. Males > 18 years of age have been selected. 750 responses from all over the nation were collected.

Results: Of these, 550 answers were total and 200 were partial.

Conclusion: This study shows that recreational aphrodisiac use is relatively common among men and is associated with illicit substance abuse, increased sexual risk behavior and increased risk of STIs.

INTRODUCTION

Aphrodisiac's (AD's) are class of substance that intrigued the sexual desire, sexual pleasure, or sexual behavior as well as tends to offer a great potential in management of early to moderate Erectile Dysfunction (ED). Though theoretical foundation of these natural aphrodisiacs was not known, but the reported sexual stimulation effects popularized their usage in these societies. The resources for the AD's are abundantly in a variety of plants, foods, animal product, minerals and synthetic chemicals. They can be classified on the basis of their chemical properties. [1]. The name 'aphrodisiac' originates from Aphrodite, the Greek goddess of sexuality and love. The mankind has been passionate about them since time immemorial. Both men and women have used aphrodisiacs whether or not they have any theoretical justification for actually enhancing sexual pleasure and even without reference to their structure (Garba et al. 2013).

People have used aphrodisiacs as stimulators for pleasure sake and also for the treatment of sexual disability or erectile dysfunction. Numerous medications, herbs and food supplements from various countries and cultures are found with the property to improve the sexual performance, to energize, vitalize and physical performance in men. Out of these, very few have been

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identified on the basis of pharmacological studies. Few of them had underwent clinical trials for the approval or have significant research [2].

Erectile dysfunction defines a man's consistent inability to maintain or accomplish penile erection for satisfactory sexual behavior or intercourse [3]. The predominance and severity of ED increases with age, incidence or other sex hormones or pathogenic factors, e.g. chronic cardiovascular diseases, high cholesterol, type 2 diabetes, smoking, alcohol, drug abuse, stress, eating habits and increasing age [4,5]. Male sexual dysfunction, which involves erectile dysfunction (ED) and premature ejaculation, is the most prevalent condition that leads to infertility, anxiety, depression, diminished self-image and reduced quality of life.

The contemporary drug therapies are solely focused on Phosphodiesterase type 5 antagonists such as sildenafil citrate, which raises the amount of cyclic Guanosine monophosphate (cGMP) in the cavernosal vasculature, contributing to the facilitation and longer duration of penile erection and hold a stable penile rigidity [6]. Upon further emphasis on the pharmacological activity of such molecules shows a systematic idea about enhancement of sexual stimulation by crossing the blood brain barrier and trying to mimic or stimulating some area

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of sexual excitement in the central nervous system. Such drugs can induce biochemical results by enhancing the supply of blood to the penile body, or by increasing the length of sexual activity by numbing the vaginal region, or also by imitating the burning feeling of sexual intercourse [7,8].

Current scenario of aphrodisiacs and its marketed product status

Several PDE5 inhibitors have been licensed by the FDA as prescription drugs to treat ED, such as:

Avanafil (Stendra), sildenafil (Viagra), tadalafil (Cialis), and vardenafil (Levitra, Staxyn). These drugs work by relaxing muscles and boosting blood flow in the penis, making it easier to get and maintain [9]. The most common side effects of PDE5 inhibitors are retinal defects, headaches, flushing, dizziness, visual disturbances, nasal congestion and other disorders caused by inhibition of PDE6 [7,8]. The use of herbal medicines with high selectivity may be alternating.

Some well-known herbal aphrodisiacs are genus Allium sativum,Alpinia galangal, Anacardiumoccidentale, Anacyclus pyrethrum, Butea frondosa, Caesalpinia benthamiana, Cannabis sativa, Chlorophylum borivilianum,Citrullus lanatus, Eurycoma longifolia,Ginkgo biloba, Hibiscus sabdariffa, etc.Many ayurvedic formulations have been claimed to possess a sex-stimulating effect in Indianmedicine system. A few examples are Vita-ex Capsules and Stay-On Capsules.Some hormonal preparations also claim sex-stimulating effect such as testosterone, androgen, aptoge (Table 1).

According to World Health Organization (WHO) Sexual health is prime to the physical or emotional health and wellbeing of people, couples and families and to the socio-economically development of communities and countries [7,8]. The National Institutes of Health Consensus Development Conference on Impotence (7 December 1992) has outlined, Male impotence conjointly known as ED may be a common medical condition that affects the sexual life of millions of men worldwide.

Sexual functioning is a complex bio-psycho-social process, coordinated by the neurological, vascular and endocrine systems. In addition to the biological factors, the psychosocial factors like societal and religious beliefs, health status, personal experience, ethnicity and socio-demographic conditions, and psychological status of the person/couple play an important role in adequate sexual functioning of a person. In addition, sexual activity incorporates interpersonal relationships, each partner bringing

Table 1: Mode of action.				
Mode 1	Circulatory stimulants	ginger, prickly ash bark, turmeric, motherwort,		
Mode 2	Adaptogens eleuthero, American ginseng, ashwagandha, schisar			
Mode 3	Testosterone enhancers	wild oats		
Mode 4	Energy booster	tonics-blood, vital energy & vital essence		
Mode 5	Muscle relaxant	wild oats, valerian		
Mode 6	Testosterone enhancers	red panax ginseng		

unique attitudes, needs and responses into the coupling. A breakdown in any of these areas may lead to sexual dysfunction.

Prevalence of sexual dysfunction in general population is very high. It is suggested that about 43% of women and 31% of men have one or other kind of sexual dysfunction [10]. Among men, premature ejaculations the most common male sexual dysfunction. There is a lack of consensus with regards to the most common sexual dysfunction in women with some studies reporting hypoactive sexual desire disorder to be the most common entity, followed by orgasmic and arousal disorders; whereas other studies suggest that difficulty achieving orgasm and vaginal dryness to be the most common type of sexual dysfunction in women. Problems of sexual dysfunction may be lifelong or acquired, general or situational.

Although sexual problems are highly prevalent, these are frequently under-recognized and underdiagnosed in clinical practice. It is also noted that clinicians also have a lack of understanding about the approach for identification and evaluation of sexual problem. It is often recommended that the treating psychiatrists and collaborating specialists need to possess broad knowledge and appropriate attitude towards human sexuality.

Statement of problem

Over three-quarters of the world's population is using medicines with an increasing trend globally (Oreagba et al 2011) [11]. The use of aphrodisiacs substances to enhance sexual performance is rampant among women in communities (Garba et al 2013) [12]. Over 80% of the populations in some Asian and African countries depend on traditional medicine for primary health care (Traditional Medicine, 2008) [13]. The WHO estimates that in many developed countries, 70% to 80% of the population has used some form of alternative or complementary medicine including Aphrodisiac substances, homeopathic, naturopathy, traditional Oriental and Native American Indian medicine (Traditional Medicine Strategy 2002-2005).[14]. In a recent study conducted in the Boston area, 52% of men between the ages of 40 and 70 reported some degree of ED. While WHO secretariat report of India observed that traditional medicines are the only available health care for 65% [16] and used by the 80% of the Asian population Male reproductive capability was found to be deficient in nearly 50% of infertile couples in step with a study carried by the WHO.

Objectives of the study

- To study the epidemiology.
- To understand the problem associated with non-regulated aphrodisiac drug.
- To compile a detailed regulation of aphrodisiac drug.

Methodology

To assess presence of Stressful Life Events and to obtain socio-demographic and clinical data a detailed self-designed semi structured questionnaire was administered to study participants. Sexual response was measured by using Changes in Sexual Functioning Questionnaires (CSFQ-17-) which have

same forms for female (CSFQ - Female Clinical Version) and male (CSFQ - Male Clinical Version) participants. CSFQ contained 17 items on a single sheet and has been used to assess the existence of sexual problems in study participants. All the 17 items needed to be answered on a five-point (Likert type) scale to assess global sexual dysfunction. In addition, other CSFQ domains; sexual desire, pleasure, arousal/excitement and orgasm/completion can be obtained and represented as a profile. The CSFQ-17-has been chosen because it is standard, have a brief, valid, reliable, relatively unobstructed, available and gender-specific questionnaire to monitor sexual functioning.

Data Collection

The research was advertised on the internet and some social networks

(https://docs.google.com/forms/ d/1Ka23JawysfGFYk9WWqG_ju9Ofgtkjh31z5DwLTOz2Ig/ viewform?usp=sharing_eip&ts=5e78e827&edit_ requested=true).

Participants answered a web-survey (available on "Google.docs" platformhttps://docs.google.com/forms/ d/1Ka23JawysfGFYk9WWqG_ju9Ofgtkjh31z5DwLTOz2Ig/ viewform?usp=sharing_eip&ts=5e78e827&edit_ requested=true) assessing psychological and social aspects related to general and sexual health. All participants provided an informed consent and did not receive any remuneration for taking part in this study. The data were collected in electronic form and were kept within the archives. Data were collected from March 2020 to May 2020. The inclusion criteria were being male and female, at least 18 years old and predominantly heterosexual.

STATISTICAL ANALYSIS

The Excel 2010 software was used for statistical analysis and values represented as mean \pm standard deviation.

RESULTS

Sexual Dysfunction was considered as the dependent variable. The independent variables were psychosocial factors (quality of relationship, stressful life event/s, self-esteem), demographic factors (age, sex, education, occupation, relationship status).

The mean age of a total of 550 males and females who completed the survey was in between the 18 to 45+ years. Demographic data of the study participants including age, occupational status, marital status, work status, geographical region, medical history, awareness, side effect experience, and mode of treatment are provided in (Table 2).

Overall prevalence in men aged 18- 24 years was found to be 63.3% among entire participants of the study. When the data was

Table 2: Socio-demographic characteristics of the group (n = 750).				
Variable	n (%)	mean ± standard deviation		
Age:	348- 18-25 (63.3%) 162- 2 5 -40 (29.4%) 40- 40& above (7.2%)	183.33 ± 155.1		

Marital status	391 unmarried (71%) 98 married (17.8%) 61 divorced (11%)	183.33 ± 180.8
Gender:	393 Male (71.4%) 157 Female (28.5%)	275 ± 166.87
Factors related:	 a) 56 Sexual dysfunction (10.2%) b) 42 Sexual dissatisfaction (7.6%) c) 88 Sexual desire problem (16%) d) 26 Arousal/excitement dysfunction (4.7%) e) 21 Anorgasmia (3.8%) d) 76 Dyspareunia (13.9%) e) 241 None (43.8%) 	78.57 ± 75.73
Recommended by:	a) 89 Healthcare (16.2%) b) 97 Pharmacist (17.6%) c) 306 Friends & relatives (55.6%) d) 58 Patient (10.5%)	137.5 ± 118
Medication	364 Self medicated (66.2%) 186 Prescribed (33.8%)	275 ± 125.86
Work status	281 employed (51.1%) 74 unemployed (13.4%) 181 students (32.9%) 14 retired (2.5%)	137.5 ± 118
Used as a	12 Immunodialator (2.2%) 42 Heart disease (7.6%) 364 Aphrodisiac (66.2%) 9 Hepatoprotective (1.6%) 34 Antiobesity (6.2%) 89 Anti-depressant (16.2%)	91.67 ± 136.49
Adverse effect experience	Painful erection Blurring vision Epictaxis Chest pain	
Side effect	Warmth or redness in the face, neck, or chest stuffy nose Headaches Stomach pain Upset stomach Nausea Diarrhea Memory problems Back pain An inability to differentiate between the colors green and blue, Loss of hearing Ringing in the ears Dizziness None 51	Common
Have you used alternative medicine with aphrodisiac any time in your life?	464 Yes (84.4%) 86 No (15.6%)	275±267.28
Which mode of treatment:	391 Allopathy (71.1%) 159 Alternative (28.9%)	275 ± 164.05
Brand/ name of drug		
Awareness regarding aphrodisiac:	430 Yes (21.8%) 120 No (78.2%)	275 ± 219.2

stratified based on subjects' age, it was 63.3% in men aged in 18-24, 29.9% in 25-40, 7% in 40yrs and above age brackets (Figure 1). Mean scores for the whole study population was found to be 188.3. Mean scores were stratified according to age groups, scores decreased with aging. This data indicated that the usage of aphrodisiac drugs would be more likely with the age group of 18-24.

And as we can easily identify that it also indicate that the intake population of unmarried is more as compared to married and divorced. This data shown in (Figure 2) that drugs used by married couple as stimulant who no longer desire sex population is less while the population of young men and women uses this drug as enhancer without any medical prescription for their personal needs are more. Though some have medical complication but their population is less. This is clearly indicated in the (Figure 3) that majority of the population use this drug without any proper prescription or recommendation from the doctor's. They are taking it as OTC without knowing the proper dose of the drug for their personal use with no such medical complication.

Maintainance of medical complication by this class of drug are Sexula dissatisfaction, sexual desire problem, arousal or excitement common in both male and female, anorgasmia, dyspareunia and some hormonal problem. And the (Figure 4) clearly shows that population is facing such medical complication is less as compares to population with no such related factor and used as recreational drug (Figure 6). The reason behind higher usage of aphrodisiacs recreationally are enhancement of sexual performance including improved erection, increased duration of erection, reduced refractory period and the ability to have multiple partners in a short period of time (Figure 7).

The current situation of the study population was 32.4% students, 51.1% employed, 13.4% unemployed and 2.5% retired. Majority of them were highly educated as 39.89% were graduates and 36.61% were post graduates (Figure 8). While only 23.5% of responders had lower than or equal to higher education. 430 responders had awareness about aphrodisiacs and 120 responders had never heard about drugs to enhance sexual performance. Amongst the 78.2% responders who had awareness out of them 37% had gained knowledge from health literature and internet, 32% from friends and relatives, 26% from media, 6% from other. The knowledge of different aphrodisiacs was as following: PDE 5 inhibitors including sildenafil, vardenafil and tadalafil were the most common drugs followed by yohimbine,



J Drug Des Res 8(1): 1077 (2021)















Amphetamine, methamphetamine, ketamine, pramipexole, alkyl Evaluation of recreational use of aphrodisiac drugs 53 nitrites, paroxetine, fluoxetine, penile Cream/Oil, herbal (Figure 9).

Products and others. Among other 28.9% poly-herbal formulation, asparagus racemosus, Curculigo orchioides, tribulus terrestris, fadogia agrestis & dactylorhiza hatagirea, jordan creams oil, vimax pills, ozomen penis massage oil, marijuana and bhang, Japani oil, grass oil, vajikarana therapy, minyak lintah tapa, duroil, vigrx plus, semenex, instant performer pills were commented as aphrodisiacs.

Amongst the aphrodisiac's users, majority of the users (66.22%) had acquired drugs without prescription from various places like pharmacy stores, internet, drug dealers, sex partners and friends. While 33.8 % responders had a

prescription for the aphrodisiac drugs b: purpose like anxiety, hard core sex. Amongst the aphrodisiac users, 83.64% users had experienced positive outcome like enhanced erection, longer lasting erection, however 16.36% responders had reported no change in outcome. As shown in table 2, very less participants had experienced no negative outcome or adverse drug reaction. Experienced negative outcomes in rest of participants among aphrodisiac users were following: painful erection, headache, blurring of vision, dizziness/loss of energy, flushing/redness of face, epistaxis, and chest pain. Results also suggests that 11 participants (20%) were using aphrodisiacs though they had knowledge of serious negative outcome/adverse drug reaction. Among aphrodisiac users, 464 participants (84.4%) reported that they have used other substance and/or recreational drugs along with aphrodisiacs while only 15.6 % of the population used it alone to experience the effect. Other medicine used with aphrodisiac are anti-depressant (n=89, 16.2%), anti-obesity (n=34, 6.2%), hepato-protective (n=9, 1.6%), heat disease (n=42, 7.6%) and immune-dilator (n=12, 12.2%) (Figure 10).

DISCUSSION

The role of community pharmacists is expanding with the advancement of healthcare services. Similarly, community pharmacists' specialized role in providing sexual health services has become vital for both male and female patients. To meet these modern requirements, health authorities are keen to make greater use of community pharmacies to promote sexual health.

The pharmacists who are competent and comfortable discussing sexual function and dysfunction with patients can positively contribute to these patients' therapeutic outcomes as well as their quality of life. Indicative of the need for professional advancement, pharmacists who enrolled in this study lacked the necessary knowledge to address issues related to the possible complications of using of sexual-enhancing products and alternative remedies.

In this study, it was observed that pharmacists usually ask







J Drug Des Res 8(1): 1077 (2021)

neither for prescriptions from the patients nor about patients' other medical conditions. If a patient has other medical conditions, sexual enhancement products should be used with caution because of potential adverse effects and interactions.

In a multicenter cross-sectional study carried out, 388 patients who had attended 6 andrology and urology clinics within a period of 3 months were enrolled to determine risk factors for ED. The results revealed that 30% of them were diabetic, 15% were hypertensive, and 56% were smokers. In another study conducted, 186 diabetic patients showed cardiovascular risk factors including hypertension (34.9%), smoking (13.4%), obesity (40%) and dyslipidemia (16.6%).

These findings suggest that, ED is accompanied by other medical conditions. Thus, when providing any treatment for ED, these comorbidities should be taken into consideration to avoid complications. In light of these findings, it is imperative that pharmacists ask patients about their conditions and provide them with appropriate advice that may increase their awareness of their condition and prevent them from developing other serious health problems.

Recently, concerns regarding the use of citalopram have been raised [16], as it is associated with potential adverse cardiac effects such as QT prolongation on the electrocardiograph (ECG). In August 2011, the Food and Drug Administration (FDA) issued a safety bulletin advising healthcare professionals and patients to avoid using citalopram on a long-term basis, particularly in doses greater than 40 mg daily or greater than 20 mg daily in patients over 60 years of age or with established hepatic impairment. The chances of cardiotoxicity become significant with biochemical disturbances, pre-existing cardiac disease, concomitant drug use and long QT syndrome. In terms of side effects, sexual dysfunctions such as sexual desire and arousal difficulties, delayed ejaculation, absent or delayed orgasm and even ED are the main side effects of SSRI (Selective serotonin reuptake inhibitors). In addition, sildenafil drugs usually cause a mild lowering of blood pressure and have a potential risk for patients taking any form of nitrate medication. Furthermore, it was shown that the use of sildenafil is associated with increased mortality and morbidity [17]. Even when the many adverse events of sexual enhancement products are known, the majority of community pharmacies in continue to engage in the non-prescription sale of sexual products.

Pharmacists are in a critical position within the healthcare system, though educating them about the benefits and risks of sexual enhancement products, as well as changing their attitudes towards their role as healthcare providers, can be challenging. With access to additional training and educational programs, pharmacists may be better equipped to increase the health literacy of patients regarding the use of sexual enhancement products.

Recently, self-medication with sexual drugs has become very common. As Marmor and Kessler reported, the illicit and off-label use of sildenafil solely to intensify and prolong the erectile response has led to the potential for abuse in terms of self-dosage at inappropriate levels or frequency [17]. Health regulatory authorities have already drawn a demarcation line between prescribed and non-prescribed drugs, but this line has been blurred in regard to community pharmacies [18]. Cooper recommended carrying out community-based research to inform policy, regulation and the preparedness of healthcare professionals and to avoid harming those who purchase overthe-counter medicines that are likely to be abused [19].

Studies in Canada [19] have emphasized the need for integrated basic and clinical sciences for women and men's health modules, including classroom lectures, large- and smallgroup case discussions, self-directed learning assignments and case-based simulations with standardized patients to address all of the issues related to the sexual health of men and women. In developing countries, though, community pharmacists lack the necessary professional skills for dispensing sexual products [20].

Treatments that cause damage due to self-medication-

Problems tend to occur when a person tries to self-diagnose and self-medicate without proper consultation. Some of the examples of this are:

Sildenafil Citrate: This composition is more commonly known as Viagra and other names and was initially intended for usage among heart patients. However, it had an unintended effect on the blood flow to the penis and thus became very popular for treating erectile dysfunction. However, if someone selfmedicate, it may actually damage his/her blood vessels and end up damaging the heart and other vital organs.

Ayurvedic Supplements: Genuine Ayurveda supplements can help someone correct sexual problems in their life but selfmedicating without knowing which ingredients are correct for them may have an adverse reaction on other parts of the body.

The promise of an easy and quick fix solution through aggressive marketing may sound very good. However, one should remember that if something sounds too good to be true then in most cases it is. What one need to do is to consult a qualified medical practitioner, whether be it in modern medicine or Ayurveda who can give the best treatment for one's problem. Remember, in most cases, the sexual problems are created with the help of media, marketing and false advertising such as in the case of penile enlargement (which plays on the fears that a man is small). This can then allow someone to buy into a hoax as they think they may have a problem when in actuality, they don't [21].

Indian version of Viagra (sildenafil), the Drug Controller General of India has finally sanctioned licenses to three domestic companies - Ranbaxy Laboratories, Zydus Cadila Healthcare and Torrent Pharmaceuticals - to sell a local variety of Pfizer's original erectile dysfunction drug.

The DCGI's made sildenafil citrate available for the first time on the Indian market by approving in 1998, which is home to over one billion people, with around 40 million males in the 40-70 age group who potentially suffer from various degrees of erectile dysfunction [22].

The branded aphrodisiac drug are Penegra (Zydus-Cadila), Caverta (Ranbaxy), Androz (Torrent) etc.

As AMRH, it is needed to harmonize the attitude to these new developed aphrodisiacs in markets. Number of products called Spanish fly is outstanding therefore is unified regulation

J Drug Des Res 8(1): 1077 (2021)

necessary. Definitely, it is important to compare all products launch dates, ATC codes, names and defined daily dose (DDD) [23].

CONCLUSION

Epidemiological studies have demonstrated a high prevalence of ED in developed countries and therefore, it is considered to be an important health problem. The aphrodisiacs belong to different categories by virtue of mechanism of action. However, they are indicated for the same purpose. At the same time, some are prescription only while others are OTC products. These aspects call for a legislation to bring all aphrodisiacs under one category of prescription only products.

REFERENCES

- 1. Jo JK, Jeong SJ, Oh JJ, Lee SW, Lee S, et al. Effect of starting penile rehabilitation with sildenafil immediately after robot-assisted laparoscopic radical prostatectomy on erectile function recovery: A prospective randomized trial. J Urol.201. 2018; 199: 1600-1606.
- 2. Hatzimouratidis K, Amar E, Eardley I et al., "Guidelines on male sexual dysfunction: erectile dysfunction and premature ejaculation". Eur Urol.2010; 57 :804-814.
- 3. Cheng JYW, Ng EML, Chen RYL, and Ko JSN. "Prevalence of erectile dysfunction in Asian populations: A meta-analysis". Int J of Impot Res. 2007; 19: 229-244.
- 4. He LJ, Zhang C, Li WY, Song GH, Jiang T, and Geng F. "Erectile function of male rats in diferent age groups: an experimental study," Zhonghua nan ke xue. Natl J Androl. 2013; 19:296-299.
- 5. Smith GE. Papyrus Ebers. Chicago: Ares Publishers.1947.
- Cote RH. "Characteristics of Photoreceptor PDE (PDE6): Similarities and differences to PDE5," Int J Impot Res. 2004; 16: S28–S33.
- 7. Rashid A. "The efficacy and safety of PDE5 inhibitors". Clin Cornerstone. 2005; 7: 47–56.

- 8. Felson SC. Viagra & Levitra ED Medications: Comparison of Erectile Dysfunction Treatments. WebMD Medical Reference. 2018.
- Avasthi A, Grover S, Sathyanarayana RTS. Clinical Practice Guidelines for Management of Sexual Dysfunction. Indian J Psychiatry. 2017; 59: S91-S115.
- 10.0reagba AI, Oshikoya AK, Amachre M et al. Herbal medicine use among urban residents in Lagos, Nigeria, BMC Complement Altern Med. 2011.
- 11.Garba ID, Yakasai IA, Magashi MK. Use of Aphrodisiacs amongst women in Kano, northern Nigeria IOSR J of P. 2013; 3: 1-4.
- 12. World Health Organization Traditional Medicine Strategy 2002-2005.
- 13. WHO: Traditional Medicine Strategy 2002-2005.
- 14. Vieweg WVR, Hasnain M, Howland RH, et al. Citalopram, OTC interval prolongation, and torsade de pointes. How should we apply the recent FDA ruling? Am J Med. 2012; 125: 859-868.
- 15. Marmor MF, Kessler R. Sildenafil (Viagra) and ophthalmology. Surv Ophthalmol.1999; 44: 153-162.
- 16. Debaje SP, Hiremath RC. Over the counter (OTC) sell of sex enhancer drugs: an emerging public health issue in India. 2014.
- 17. Yuksel N. Pharmacy course on women's and men's health. Am J Pharm Educ. 2011; 75: 199.
- 18. Khan TM, Ibrahim Y. A qualitative exploration of the non-prescription sale of drugs and incidence of adverse events in community pharmacy settings in the Eastern Province of the Kingdom of Saudi Arabia. Eur J Hosp Pharm Sci Pract. 2012; 19.
- 19. Gupta R. Side-Effects of Self-Administered Aphrodisiac Medicine and Instruments and Their Ayurvedic Alternatives.
- 20.Local Viagra varieties from Ranbaxy, Cadila and Torrent finally arrive.
- 21. CFR Code of Federal Regulations Title 21.
- 22. Drugs and Cosmetics Rules Schedule H & Schedule H1 Drugs. 2020.

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