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Socio-cultural behavior comparative study of the misuse of Cyproheptadine combined with Dexamethasone in Kinshasa population, Democratic Republic of Congo

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Abstract

Objective: The aim of this study is to determine the prevalence of Cyproheptadine combined with dexamethasone misuse in two groups of the Kinshasa population and to describe its characteristics.

Methods: A cross-sectional study was conducted in two town sectors of Kinshasa (N'djili city and University of Kinshasa), Democratic Republic of Congo (DRC), over a 4 month period (September 2012 to December 2012). Data from 305 participants, aged between 18 and 30 years were collected and analyzed. Mean and standard deviation were used for quantitative variables and frequency and percentage for categorical variables. In order to determine the relationship between sociodemographic status and Cyproheptadine combined with dexamethasone use the Chi-square test was conducted. Logistic regression was used to determine predictors of Cyproheptadine combined with dexamethasone use. A p-value of <0.05 was considered statistically significant.

Results: A total of 315 females were enrolled in the study, the response rate were 96.82% (305 participants). There were 199 participants from N'djili city (77.22 %) with 139 users of cyproheptadine combined with dexamethasone and 106 participants from University of Kinshasa (22.78 %) with 41 users of cyproheptadine combined with dexamethasone. The major of participants had a range of age between 18-22 years old in University of Kinshasa (46.34%) and between 23-26 years old in N'djili city (46.04%). the main reason for Cyproheptadine combined with dexamethasone use in N'djili city was to have buttock's while to become beautiful was the main reason of use in the University of Kinshasa (71.00%). Self-prescription was the most common procurement method (98.56 % in N'djili city and 95.12% at University of Kinshasa). The misuse of Cyproheptadine combined with dexamethasone was significantly associated with site, N'djili city (69.8 %) used more Cyproheptadine combined with dexamethasone than Students of the University of Kinshasa (38.68 %) (Chi - square = 79.13, df = 1; p=0.0001).

Conclusion: This study shows that the Kinshasa population is significantly misusing Cyproheptadine combined with dexamethasone either to have buttock's protuberances or to become beautiful and is highly exposed to its risk, including obesity and infertility.

Keywords: cyproheptadine, dexamethasone and sociocultural behavior

Introduction: Background

Cyproheptadine is a first generation antihistamine with additional anticholinergic, anti- serotonergic, and local anaesthetic properties [1]. It has been used in treatment of allergic reactions, nightmares related to PTSD, cyclical vomiting syndrome, to stimulate appetite, drug induced hyperhidrosis and SSRI induced sexual dysfunction [2, 8]. It can also be used as a preventive measure against migraine in children and adolescents [9].

The introduction of glucocorticoid therapy by Philip Hench in the 1950s revolutionized the treatment of rheumatic and inflammatory disease [10]. Dexamethasone is a potent synthetic member of the glucocorticoid class of steroid drugs [11]. It is a potent anti-inflammatory drug with 25 to 50 times the potency of hydrocortisone and is up to 16 times as potent as prednisolone [12]. It is used to treat many inflammatory and autoimmune conditions, such as rheumatoid arthritis and bronchospasm, idiopathic thrombocytopenic purpura and has also been used in treatment of adrenal insufficiency and Addison's disease [13].

The effect of Cyproheptadine and dexamethasone on weight gain has been confirmed in many studies. For example, a randomized controlled trial by Couluris et al. of the effect of Cyproheptadine hydrochloride on weight in children with cancer/ treatment-related cachexia found a mean weight gain of 2.6 Kg after 4 weeks of treatment with Cyproheptadine among patients with cachexia [14]. Alnagma (dexamethasone) is abused as cosmetic for gaining weight and whitening skin by Sudanese women [15].

Aimée M. Lulebo et al. [16] showed that the Kinshasa population is significantly misusing Cyproheptadine for weight gain and for obtaining "roundness physical appearance". So, they are highly exposed to its risk; including obesity.

Obesity is among the main risk factors of NCDs. Its prevalence worldwide has doubled during the past 30 years, females being

more obese than males [17]. In sub-Saharan African (SSA) countries, obesity has also become an important public health problem. During 2007, the prevalence of obesity in the DRC was estimated to be 12.2 % for males and 13.3 % for females [18]. Studies carried out in the DRC showed that obesity was a significant predictor of mortality among hypertensive patients and a significant predictor of chronic kidney diseases [19, 20].
The same study showed that half of the study participants (50.0 %) used Cyproheptadine combine with Dexamethasone (87.6 %). Currently no study has been carried out for describing the prevalence and characteristics of the misuse of Cyproheptadine combined with dexamethasone in the Kinshasa population. This is the aim of the present study.

Methods

Study design and sample

Between September and December 2012 a cross-sectional study was carried out in two town sectors of Kinshasa. N'djili city was selected purposively because of its population behavior to the up-to-date fashion and University of Kinshasa because of its leadership in the education sector. Thereafter, a multistage sampling was used for identifying study participants.
N'djili city has thirteen quarters. The first stage involved selection of three quarters in N'djili town sector using a simple random sampling technique. In the second stage, in each selected quarter three streets were selected using also a simple random sampling technique. In the streets by systematic random sampling ladies aged between 18 and 30 years and using Cyproheptadine were selected and enrolled.
The third ladies' homes of University of Kinshasa were concern for this study. In each home by systematic random sampling ladies aged between 18 and 30 years and using Cyproheptadine were selected and enrolled too.
A total of 305 participants were surveyed. The study protocol was approved by the Internal Review Board of the University Of Kinshasa Faculty Of Pharmacy (Protocol approval number 08/2012). A written informed consent according to the Helsinki declaration II was obtained from all the study participants. Confidentiality was maintained by not using participants' names in the questionnaire. A face-to-face interview using a structured questionnaire was used for data collection.

Study variables

The content of the first part of the questionnaire included socio-demographic variables (age, education level and marital status); followed in the second part by the description of Cyproheptadine combined with dexamethasone use (duration and frequency of use; reasons of use; sources of recommendation and procurement methods and mode of administration). In the third part of the questionnaire, knowledge of the side effects of Cyproheptadine and dexamethasone and users' satisfaction were measured.
The use of Cyproheptadine combined with dexamethasone was measured by participants self- reported. In this study, the misuse of Cyproheptadine is defined as its use for gaining weight and having a roundness physical appearance and not for allergia, real anorexia, severe malnutrition or cachexia, autoimmune diseases, rheumatic and inflammatory diseases. Misusers were those participants, at the time of the study, who declared that they were currently using or who had ever used it within the past 6 months for that purpose.

Statistical analysis

Statistical analyses were performed using the statistical package for social sciences (SPSS) of the University of Kinshasa version 20.0. Mean and standard deviation were used for quantitative variables and frequency and percentage for categorical variables. In order to determine the relationship between socio-demographic status and Cyproheptadine associate to dexamethasone use Chi-square test was performed.
Logistic regression was used to determine predictors of Cyproheptadine combined with dexamethasone use. A p-value of <0.05 was considered statistically significant.

Results

Characteristics of the study participants and frequency of Cyproheptadine use

A total of 315 participants were enrolled in the study, the response rate were 96.82%. There were 199 participants from N'djili city (77.22 %) and 106 participants from University of Kinshasa (22.78 %). The major of participants had a range of age between 18-22 years old in University of Kinshasa (46.34%) and between 23-26 years old in N'djili city (46.04%). Of the 139 users of Cyproheptadine combined with dexamethasone of N'djili city, 98(70.50%) were never married, 20(14.39%) were married, 12(8.63%) were divorcees and 9(6.47%) were widows. About their highest educational level, 30(21.58%) had no educated (or preschool), 16(11.51%) had primary education, 74(53.23%) had secondary education and 19(13.67%) had higher education. Of the 41 users of Cyproheptadine combined with dexamethasone of University of Kinshasa, 40(97.56%) were never married and 1(2.44%) were married. About their educational level, 31(75.60%) were in first level and 10(24.40%) were in second level.

Reasons of the use of Cyproheptadine combined with dexamethasone and procurement methods

Table 2 shows that the main reason for Cyproheptadine combined with dexamethasone use in N'djili city was to have buttock's protuberances (50.35 %) and to become beautiful was the second reason of use (23.74%). To become beautiful was the main reason of use in the University of Kinshasa (71.00%) and to have buttock's protuberances was the second reason (14.63%). Self-prescription was the most common procurement method (98.56 % in N'djili city and 95.12% at University of Kinshasa), and only less to 5 % of users declared to have used a medical prescription for the procurement of Cyproheptadine or dexamethasone.

Knowledge of side effects of Cyproheptadine associate to dexamethasone abuse and satisfaction

As shown in Table 2, the majority of Cyproheptadine combined with dexamethasone users (90.24 % at University of Kinshasa and 70.50% in N'djili city) were aware that this association could give them some side effects. However, the majority of users declared to be satisfied (85.61 % in N'djili city and 85.36 % at University of Kinshasa). The main features of cyproheptadine combined with dexamethasone abuse were whole body obesity (25.17% in N'djili city and 19.51% in the University of Kinshasa), central obesity(32.37% in N'djili city and 14.63% in the University of Kinshasa), vertigo(49.64% in

N'djili city and 34.15% in the University of Kinshasa), drowsiness(45.32% in N'djili city and 48.78% in the University of Kinshasa), cutaneous eruptions(15.11% in N'djili city and 12.19% in the University of Kinshasa), malaise or fatigue(39.57% in N'djili city and 39.04% in the University of Kinshasa) and Icterus(9.35% in N'djili city and 7.32% in the University of Kinshasa).

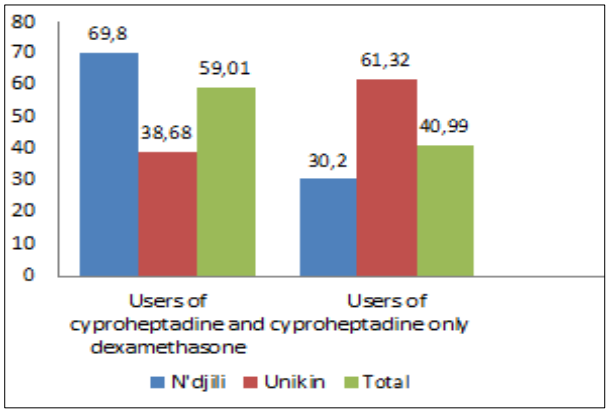

Fig 1: Study participants and frequency of Cyproheptadine-Dexamethasone use

Table 1: Study sample characteristics of cyprohaptadine-dexamethasone users (180)

Variables	Sites	
	N'djili (n=139)	Unikin(n=41)
Users of association	139(77.22)	41(22.78)
Age (years)		
18-22	25(17.98)	19(46.34)
23-26	64(46.04)	18(43.90)
27-30	50(35.97)	4(9.76)
Marital state		
Never married	98(70.50)	40(97.56)
Married	20(14.39)	1(2.44)
Divorcee	12(8.63)	-
widow	9(6.47)	-
Highest educational level		
No education, preschool	30(21.58)	
Primary	16(11.51)	
Secondary	74(53.23)	
higher first	19(13.67)	
Level		31(75.60)
second level		10(24.40)

Table 2: Reasons, frequency and duration of use, Procurement methods, Satisfaction and Knowledge of side effects abuse.

Variables	Sites		Statistic test	
	N'djili (n=139)	Unikin (n=41)	Khi-2	P
Reasons of use			79.136	0.0001
To became beautiful	33(23.74)	30(71.00)		
To have buttock's protuberances To	70(50.35)	6(14.63)		
Gain weight	25(17.98)	5(12.11)		
To protect her marriage	9(6.47)	-		
To prove her husband's prosperity	2(1.44)	-		
Satisfaction			34.82	0.0001
Yes	119(85.61)	35(85.36)		
Not/not really	20(14.29)	6(14.64)		
Knowledge of side effects abuse				
Yes	98(70.50)	37(90.24)		
No	41(29.50)	4(9.76)		
Frequency of use				
Daily	88(63.30)	27(65.85)		
Weekly	22(15.82)	7(19.51)		
Twice a week	4(2.87)	4(9.75)		
Three times per week	5(3.59)	1(2.44)		
Twice a month	8(5.75)	1(2.44)		
rarely	12(8.63)	1(2.44)		
Duration of use (weeks)			160.052	0.0001
0-2	9(6.47)	2(4.87)		
3-6	4(2.88)	20(48.78)		
7-11	3(2.16)	8(19.51)		
12-15	6(4.31)	4(9.76)		
16-20	9(6.47)	2(4.87)		
21-24	16(11.51)	2(4.87)		
>25	95(68.34)	3(7.32)		
Procurement methods				
Medical prescription	2(1.44)	2(4.88)		
Self-medication	137(98.56)	39(95.12)		

Table 3: Symptoms and signs of cyproheptadine associate to dexamethasone abuse

Variables	Sites	
	N'djili(n=139)	Unikin(n=41)
Symptoms and signs		
No	10(7.19)	4(9.76)
Whole body obesity	35(25.17)	8(19.51)
Central obesity	45(32.37)	6(14.63)
Vertigo	69(49.64)	14(34.15)
Drowsiness	63(45.32)	20(48.78)
Cutaneous eruptions	21(15.11)	5(12.19)
Malaise/fatigue	55(39.57)	16(39.04)
Icterus	13(9.35)	3(7.32)

Table 4: The results of univariate analysis

Variables	Effect	E.S	P-value	OR
Become beautiful (ref. Unikin)	2.15	0.274	0.0001	8.585
Have buttuck's protuberances	-1.893	0.320	0.0001	0.151
Gain weight	0.556	0.346	0.108	0.573

Discussion

This study aimed to make the socio-cultural comparative of Cyproheptadine combined with dexamethasone misuse in two kinds of Kinshasa's population and to describe its characteristics. The main findings of this study were as follows: (i) the prevalence of Cyproheptadine combined with dexamethasone misuse was 59.01 % (69.8% in N'djili city and (38.68% at University of Kinshasa). (ii) Cyproheptadine combined with dexamethasone was used more by females aged between 23-26 years old in N'djili city and 18-22 years old at University of Kinshasa. (iii) The majority of Cyproheptadine combined with dexamethasone users reported to this combination on a daily basis. (iv). More than a half of Cyproheptadine combined with dexamethasone users in N'djili city had used them for a period over twenty- five weeks while at the University of Kinshasa users and use this combination for a period between 3-6 weeks. (v) Self-prescription is by far the main procurement method of Cyproheptadine combined with dexamethasone by the users. (vi). To have buttock's protuberances was the mean reason of use of cyproheptadine combined with dexamethasone in N'djili city while at the University of Kinshasa the mean reason was to become beautiful.

To the best of our knowledge, there is just one case report in literature of Cyproheptadine and dexamethasone abuse [21]. This study is the report of one case of a young man with 23 years old that taken cyproheptadine and dexamethasone for weight gain. We did not find any paper that discussed Cyproheptadine combined with dexamethasone use in the context of this study. So, in this study, then, the prevalence of Cyproheptadine combined with dexamethasone misuse will be discussed with the prevalence of cyproheptadine or corticosteroids inappropriately used for increasing the body weight, muscle mass, strength in adults and an improved appearance.

The prevalence of Cyproheptadine combined with dexamethasone misuse (59.01%) reported by this study was low comparatively to the prevalence of cyproheptadine misuse in previous studies (72.9%) [16]. By the way, the previous studies showed that 87.6% of cyproheptadine users associate it with dexamethasone. The prevalence difference may be explained by low consumption of the combination by the students of University of Kinshasa because of difference in mean reason of use. The misuse of Cyproheptadine combined with dexamethasone was significantly associated, as shown in Table 2, with site, Ndjili city (69.8 %) used more Cyproheptadine combined with dexamethasone than Students of the University of Kinshasa (38.68 %) (Chi - square = 79.13, df = 1; p=0.0001). Also, this misuse was significantly associated to the mean reason of use. The results of univariate analysis showed that to become beautiful represents two times more the reason of consumption at University of Kinshasa than at N'djili city (effect=2.15, OR=8.585). On the other hand, an effect of – 1.893 was found about to have buttock's protuberance. It means that the probability of using cyproheptadine combined with dexamethasone to have buttock's protuberance is less among the University students than the N'djili ladies. (Effect=-1.893; OR=0.151).

The medical prescription was less mentioned by users as the procurement method of Cyproheptadine and dexamethasone, it corroborates with previous studies that also reported self-prescription as the most common procurement method [16]. Self-medication and the use of nonprescription drugs are common in developing countries but none of them used corticosteroids [22, 24].This study reported the long term misuse of Cyproheptadine combined with dexamethasone and showed the significant association between duration of use and the site (chi-square= 160.05, df = 1; p = 0.0001). From the Literature, Cyproheptadine can reportedly produce serious side effects especially when taken in overdose; that includes hallucinations, convulsions, central nervous system depression and sudden cardiac arrest [25]. Death cases were also reported as a result of Cyproheptadine intoxication at a concentration of more than 15 times that of therapeutic. It has been established that exogenous corticosteroid therapy suppresses the production of corticotropin- releasing hormone and corticotropin and can induce adrenal atrophy that may persist for months after the cessation of corticosteroid treatment and could prove fatal during stress [26, 27].

On routine daily use, Cyproheptadine may cause several side effects, including drowsiness, tired feeling, insomnia, spinning sensation, blurred vision, and loss of coordination, upset stomach, nausea, diarrhea, and weight gain. It is known that a long-term corticotherapy can cause side effects such as hyperglycemia and diabetes, oedema, weight gain,

hypertension and immune suppression [28]. In addition, previous studies reported dexamethasone effect on the level of steroids hormones mainly estrone, estradiol and testosterone and lead to increase their levels in body, which cause the induction of aromatase enzyme [29] , and also increases the estradiol, testerone and androstenedione level in both plasma and ovaries cells [30]. This situation could subsequently lead to hirsutism, amenorrhea, prolonged luteal phase and affects menstrual cycle, thus possibility causing infertility. While elevation in estrone level may increase risk of breast, ovarian and endometrial cancers, since paracrine function of estrone enhance proliferation and repress apoptosis mechanisms [31].

Importantly, as previously described, many randomized controlled trials have demonstrated that Cyproheptadine and dexamethasone independently induce weight gain and obesity; their combination can potentially increase weight gain and/ or obesity, thus, enhancing the occurrence of NCDs. [32, 35]. We believe that the users of Cyproheptadine combined with dexamethasone in Kinshasa are exposed to these risks. Evidence suggests that obesity independently increases the risk of CVD in women even in the absence of other metabolic abnormalities [36].

This study confirms that African women usually engage in obesogenic behavior because they deeply believe that Black men find bigger women and those with buttock's protuberances more attractive as described by Shoneye [37].

Buy the way, this showed that education degree do not impact to misuse of consumption of Cyproheptadine combined with dexamethasone (University of Kinshasa: chi-square= 10.6, df = 1; p = 0.0001; N'djili city: chi-square= 6.709, df = 1; p = 0.082).

Limitations and strengths of the study

This study has potential limitations. The two town sectors selected are not representative the whole population of Kinshasa; knowledge of the participants or their perception of risk for obesity and its complications were not assessed. Also, the dexamethasone's effect on the level of steroids hormones and also increases of the estradiol, tester one and androstenedi one level in both plasma and ovaries cells and their complications were not assessed. In addition, some of women selected in N'djili city could be students at University of Kinshasa and others women could be ashamed by some questions. Nevertheless, this is the second study, to the best of our knowledge, which has described cyproheptadine phenomenon among the Congolese population of Kinshasa and the first study to focus in the combination cyproheptadine and dexamethasone.

Conclusion

This study showed that the Kinshasa population is significantly misusing Cyproheptadine combined with dexamethasone and is highly exposed to its risk; including obesity and Infertility. We are to recommend appropriate educational programs to alert the community on the danger of substance abuse, such as Cyproheptadine and steroids. More profoundly, every effort should be made to change the view or concept of the community regarding obesity.

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