Original Article

Glucocorticoids Misuse among Premenopausal Women in Southern Iraq

Asia Hameed Saddam[1], Majid Abdulwahab Maatook[2], Mahmood Thamer Altemimi[3]

[1]Southern Technical University/ College of Health and Medical Technology/ Community health technologies, Iraq/ Basra

[2] Professor, Southern Technical University/ College of Health and Medical Technology, Iraq/ Basra

[3]MD, Adult Endocrinologist, Thi Qar Specialized Diabetes Endocrine and Metabolism Center (TDEMC), Thi Qar Health Directorate, Iraq/ Thi Qar

Email: asiahamidsaddamali@gmail.com

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Abstract

Background: The non-prescription usage of these medications is high because of their spectacular response and various available formulations, despite the fact that they have several negative effects.

GCs misuse is an important problem that has been inadequately addressed in Iraq. The purpose of female misuse of GCs is to become beautiful, plump, and seductive (fat body, which is culturally acceptable in some communities) through weight gain or marriage. The objectives of the study were to evaluate the causes of GCs misuse among reproductive women in the South of Iraq.

Methods: a cross-sectional study was conducted on 251 reproductive-aged women who were misusing GCs for any cause and attending Thi-Qar Specialized Diabetes, Endocrine and Metabolism Center (TDEMC). They were evaluated for demographic characteristics, medical and social histories, and then examined carefully for any signs of GCs misuse.

Results: The mean ages of women were 33.21±8.6 years, BMI 30.68±7.3 Kg/m², and 208 (82.9%) women were either overweight or obese. The 251 subjects misuse glucocorticoids most were married: 195 (77.7%); of medium social class: 142 (56.6%); lived in the city center: 198 (78.9%).

Two hundred and one (80.1%) patients obtained the drug from the pharmacy and 18 (7.2%) from street vendors.

Nearly all women had many features of GCs-induced adverse effects, weight gain was the highest side effect in 234 (93.2%) patients, and there were many misconceptions about their safety as 41.8% thought that using GCs was safe, and 45.8% did not feel guilty about using those medications.

About 90 of them (35.9%) were still misusing drugs during the time of the meeting, 53 (21.1%) reported that physicians recommended them at the first time for using glucocorticoids and the majority 198 (78.9%) were misusing GCs by themselves, friends, or first-degree family to become beautiful or marry.

Conclusions: This study showed high misuse of GCs among females in The-Qar, Iraq. The relatively high rate of misuse of these drugs can be attributed to a lack of awareness of their chronic adverse effects, their widespread availability at pharmacies, plus their dramatic and quick response. Therefore, educational programs have to be implemented to inform the public about the adverse effects of GCs and the problems of misuse of drugs.

Keywords: (GCs) glucocorticoid, misuse, drugs, women, Iraq.

I. INTRODUCTION

GCs are widely accessible over-the-counter (OTC), liberally recommended by locals' medical practitioner, and frequently misused by women for the purpose of treatment of different symptoms including skin conditions, joint pains, febrile illnesses and asthma. As a result, a large number of people become steroid-dependent [1].

The Iraqi healthcare system has numerous problems, which were likely exacerbated by the UN (United Nations) economic sanctions imposed on Iraq at the 1990 period [2]. Use of nonprescription medications and self-medication such as GCs are

widespread because medications in Iraq are not categorized as either over-the-counter or prescription-only, the general population has access to a greater range of medications than would otherwise be the case [3].

As a result, self-medication is a prevalent practice in Iraq, and drugs can be purchased in pharmacies or from street vendors since the mid-1980s when the country was in the first Gulf War, and after the economic sanctions were imposed in 1991. [4].

Unfortunately, ladies in our nation misuse a lot of over-the-counter GCs and glucocorticoids containing cosmetic creams, both imported and locally blended in order to deposit fat [5]. Being fat is culturally acceptable in many developing countries, because it is connected with beauty, prosperity, health, and status, whereas being thin is seen as a sign of bad health or poverty [6].

Because of the magic effects of GCs, they were widely used without a prescription, which led to adverse effects that can also be severe even at low doses [7]. Therefore, when treatment exceeds three weeks, GCs should be gradually discontinued [8]. The dangers of too many GCs are myriad and have been widely documented for decades [9]. They, like any other potent medication, have serious adverse effects, and these side effects are costly [10].

The damage caused by the GCs can affect a patient's life even years after GCs discontinuation. Interestingly, the risk of an incident occurrence can continue for some complications after previous GCs use. Prior GCs therapy has been linked to an increased risk of hypertension, hyperglycemia [11], adrenal insufficiency [12], decreased wound healing, osteoporosis, osteonecrosis, cardiovascular disease, infections, and cancer [13]. Our objectives were to evaluate the causes of GCs misuse among reproductive women in the South of Iraq.

II. Materials and methods:

A. Methodology: A cross-sectional observational descriptive study was conducted on 251 reproductive-aged women who were misusing GCs for any cause and attending Thi-Qar Specialized Diabetes, Endocrine and Metabolism Center (TDEMC), Thi-Qar, Southern of Iraq from October 2021 till July 2022. Prior to data collection, formal ethical approval was obtained from the Ethical Committee of Thi-Qar Health Directorate by the approval number (64/2021 at 24th- October 2021) to conduct the study. Informed written consent was assigned from each participant during recruitment to fulfill the international research ethical criteria. Each patient was directly interviewed for a full medical history including a well-designed questionnaire was assessed in detail then a careful examination was done.

Sample size was calculated according to the equation {N = P (1-P) Z2 /d2} N = the minimum required size of the sample, p = proportion of (GCs misuse) in the population which was (26-130 per 1000) according to two evidences [14] [15], z = confidence level that will be used (z = 1.96 for 95), d = is the desired margin of error (=0.05). The minimum sample size required to conduct this study was (N = 45-174 cases), but the real number of cases in this study was (250) for more satisfaction.

All participants were including any premenopausal women who have currently or previously misused GCs by the spontaneous use of non-prescription glucocorticoids or the illegal purchasing of prescription glucocorticoids by someone for whom they were not prescribed, or repeated use of prescribed glucocorticoids on their own without consulting a specialist, or where peoples used glucocorticoids at a way that was not allowed (e.g. for cosmetic, gaining weight, pain relief, etc.).The following participants had been excluded from the study if they were not misused GCs, or used GCs for therapeutic purposes and under the supervision of a specialist doctor, postmenopausal women, or women before menstruation, and or refused to interview the questionnaire.

Each patient was interviewed separately to maintain confidentiality and they were evaluated for demographic characteristics including age, occupation, residency, marital status, parity, and history of current pregnancy. Medical and social histories were taken carefully such as smoking (smokes at least one cigarette a day), alcohol consumption (drinking any form of alcohol regularly or accidentally), history of hypertension (diagnosed by a physician report or on antihypertensive agents), diabetes mellitus (DM) (diagnosed by a physician report or known on treatment), Asthma, history of cardiovascular diseases or stroke, rheumatoid arthritis, inflammatory bowel disease, any confirmed autoimmune disease like idiopathic thrombocytopenic purpura, multiple sclerosis, systemic lupus erythematosus, etc.

Social class for each participant was assessed according to family income and education level, it was classified as low, medium, and high [17].

Every patient was examined generally for body built, moon face, ecchymosis, skin thinning, and straie. The anthropometric measurements including height (meter), weight (kilogram), and waist circumference (WC) in centimeters were measured at a midway point between the lower costal margin and the iliac crest while the woman was standing. Central obesity was documented when WC is equal to or more than 99 cm by depending on a local study done on a healthy adult from Basrah in 2007 [18]. The BMI was determined as the weight by kilograms divided by the height at meters after squaring it. According to the BMI, women had been categories into [underweight below 18.5 kg/m2, normal weight BMI=18.5 to 24.9 kg/m2, overweight BMI=25.0 to 29.9 kg/m2, class I obesity BMI=30.0 to 34.9 kg/m2, class II Obesity BMI=35.0 to 39.9 kg/m2, and class III Obesity BMI above 40 kg/m2.][23].

The types of GCs were including dexamethasone, prednisolone, hydrocortisone, betamethasone, triamcinolone, methylprednisolone, fludrocortisone, fluticasone, budesonide, and herbier. The name and type of GCs were searched in detail with the women according to formulations type in a lot of the cases. The pharmacological forms of GCs were labeled as (tablets, syrups, injections, creams, ointments, aerosols, drops, and nasal sprays). The dose and the period of misusing GCs were registered, but unfortunately, many of our participants were not remembering or deny the exact duration of GCs misuse.

A specific questionnaire was directed to each participant regarding general medical background including knowledge of adverse effects of GCs; steroid use is safe; guilty feeling for using these drugs; stopped from using; cause of cessation; on who was advise them first to use GCs; source the drug; which other first-degree relatives using glucocorticoids at any time previously; addiction of other drugs. They were later asked for the cause of misusing GCs (weight building, cosmetic, appetizer, pain relief, etc.).

B. Statistical analysis:

Parametric variables were normally distributed by using the one-sample Kolmogorov–Smirnoff test and presented as mean and standard deviation (SD). The Chi-square test was employed for non-parametric data, while independent student t-tests and analysis of variance (ANOVA) were utilized to analyze continuous variables. Statistical Packages for Social Sciences Version 23.0 was used for data analysis (SPSS Inc., Chicago, IL, USA). The criterion for statistical significance was p 0.05.

III. Results:

The basic socio-demographic characteristics of all subjects were presented in table-1: Two hundred and fifty-one women were already misused GCs. Their mean ages were 33.21±8.6 years, mean BMI was 30.68±7.3 Kg/m² and 208 (82.9%) women were either overweight or obese, and the mean WC was 99.85±17.0 centimeter.

Most of the women were living in urban district 198 (78.9%), while others were from rural district 53 (21.1%), and according to marital status, 195 (77.7%) women were married, 43 (17.1%) single, seven (2.8%) widowed, and six (2.4%) divorced. The majority of these women were homemakers 181 (72.1%), while others were employees 49 (19.5%) and students 21 (8.4%).

For educational level, those women were arranged in literacy, primary school, secondary school, and institute or university levels as 25 (10%), 96 (38.2%), 65 (25.9%), and 65 (25.9%) respectively. According to Socioeconomic status, 104 (41.4%), 142 (56.6%), and five (2.0%) women were living in low, medium, and high socioeconomic status respectively. This study recorded 28 (11.2%) pregnant, 4 (1.6%) smokers, and one (0.4%) alcohol drinker.

Table 1: Demographic characters of women who are GCs misuse.

Variable	Frequencies (%)/Range
Age (years) (M±SD =33.21±8.6**)**	Range (14-50)
BMI (Kg/m²) (M±SD=30.68±7.3**)**	Range (14-62)
BMI <25 Kg\m²	43 (17.1%)
BMI ≥ 25 Kg\m²	208 (82.9%)
W.C (centimeter) (M±SD =99.85±17.0**)**	Range (65-167)

WC < 99 cm **WC ≥ 99 cm**		118 (47%) 133 (53%)
Marital state	**Married**	195 (77.7)
	Widowed	7 (2.8)
	Single	43 (17.1)
	Divorced	6 (2.4)
Occupation	**Employed**	49 (19.5)
	Student	21 (8.4)
	Housewife	181 (72.1)
Education level	**Literacy**	25 (10.0)
	Primary	96 (38.2)
	Secondary	65 (25.9)
	Institute or University	65 (25.9)
Social class	**Low**	104 (41.4)
	Medium	142 (56.6)
	High	5 (2.0)
Place of residence	**Urban**	198 (78.9)
	Rural	53 (21.1)
Pregnant		28 (11.2)
Smoking		4 (1.6)
Drinking of alcohol		1 (0.4)
Abbreviation: M, mean; SD, stander deviation; BMI, body mass index; W.C, waist circumstance. Kg, kilograms. m^2, meter.		

The participants' purposes for GCs misuse were presented as in fig.1: 108 (43 %) post-treatment, 48 (19.1%) cosmetic, 67 (26%) appetizer, 13 (5.2%) bodybuilding, 15 (6%) combined post-treatment and appetite.

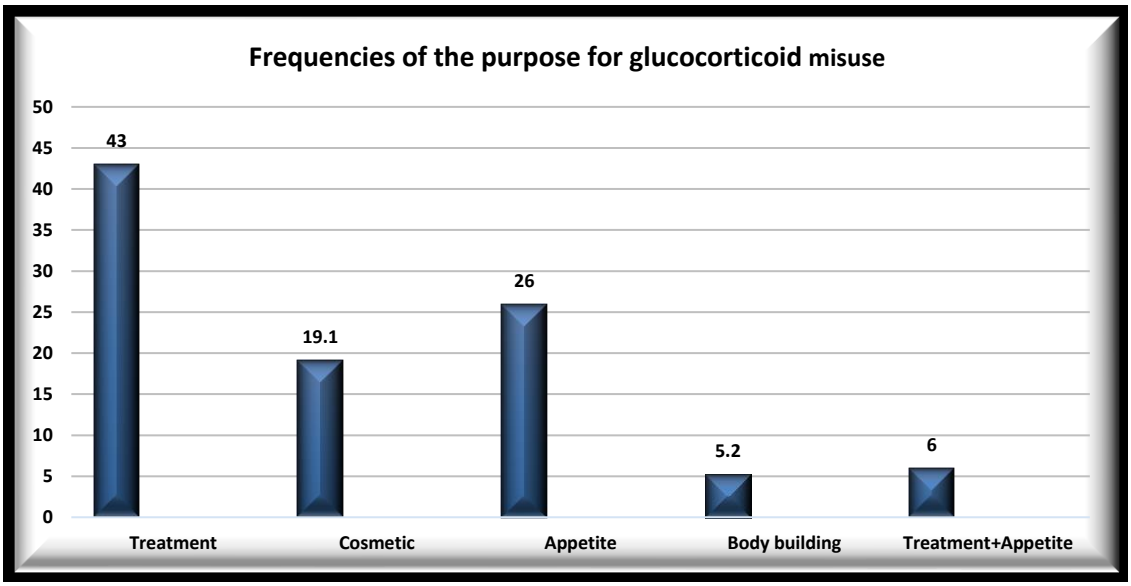

Figure 1: Frequencies of the purpose for GCs misuse among participants.

Misbeliefs and attitudes towards the misuse of GCs are presented as one hundred and five (41.8%) believed that using GCs was safe, and 115 (45.8%) did not even feel guilty for using such drugs. The mean duration of use was 53.36±68.4 months and 90 (35.9%) were still misusing the drugs at that time of study. Most women who stopped misusing drug usually did thus suddenly were 64 (25.5%) appeared side effects, 18 (7.2%) dependent on doctor advice, 2 (0.8%) did not have money to buy drugs, 67 (26.7%) have reached the point of sufficiency, 10 (4%) others cause of cessation. One hundred and six (42.2%) had first-degree relatives who misused GCs and some females concurrently misused other drugs were 67 (26.7%) herber, 32 (12.7%) cosmetic mixtures, 12 (4.8%) mix of herber and cosmetic mixtures.

Table 2: Misbeliefs and attitudes towards the misuse of GCs

Variables		Number (frequency %)
Is steroid use safe?	Yes	105 (41.8%)
	No	146 (58.2%)
Do you feel guilty?	Yes	136 (54.2%)
	No	115 (45.8%)
Duration of use, months		53.36±68.4
Stopped	Yes	161 (64.1%)
	No	90 (35.9%)
Cause of cessation	Side effects	64 (25.5%)
	Doctor advice	18 (7.2%)
	No money	2 (0.8%)
	Sufficiency	67 (26.7%)
	Others cause	10 (4%)
Family history of corticosteroid use	Yes	106 (42.2%)
	No	145 (57.8%)
misuse of other drugs	Herber	67 (26.7%)
	Cosmetic mixtures	32 (12.7%)
	Herber+cosmetic mixtures	12 (4.8%)
	No	140 (55.8%)
Total		251 (100%)

IV. Discussions:

Most of the GCs misused women were married, housewives, and living in urban districts which agrees with a study done in Basrah 2010 [4]. Despite, more than half of these women were from a medium social class, It was clear that one third of those women were at primary school level of education and a high rate of GCs misusing among this group may be explained by the low level of education of these women expose them to deception by others and this was in agreement to a study published by Armstrong et al [1].

Approximately less than half (43%) of the women claimed that they first used GCs on the advice of a physician for therapeutic purposes or as an appetizer; however it was hard to ascertain because it was unlikely here that a physician will give these dangerous drugs to weight gain, but they might continue to use GCs when they noticed symptom relief or beauty results. On the other hand, more than half of the women (cosmetic, bodybuilding, and appetizer) were using GCs by themselves to become beautiful, plump, and seductive (fat body) through weight gain as being overweight was frequently regarded as being prestigious and as having an impact on forming connections or finding a spouse in society [6]. Women in the reproductive age stage are aspired to appear resolute beauty, and seek the attention of others, especially that of the opposite sex, which can be realized through having a beautiful face and body. These data were consistent with another study done in Iraq at 2010 [4], while Rguibi et al found that weight gain was the frequent cause of GCs misuse [19].

Topical glucocorticoids are employed as epidermis lighteners because of their powerful whitening properties as well as anti-inflammatory properties, which can help to lessen the occurrence of dermatitis when combined with other unsafe skin lightening treatments [20]. The primary reason for using these medicines was to lighten the skin, which is the requirement of most women to become beautiful.

Women may be encouraged to repeat the GCs prescription themselves in different countries where such prescriptions are available over the counter, starting a vicious cycle that leads to unnecessary consequences for this problem [15].

Self-medication is a less expensive option for people with limited income due to those who cannot afford to pay for medical services, and it eliminates long wait times in the chronically overburdened public health system [21].

The relatively high rate of misuse of these drugs can be attributed to a lack of awareness of their chronic adverse effects, as well as their widespread availability at pharmacies plus their dramatic and quick response. It is necessary to plan a strategy for limiting the overuse of these drugs [22].

Despite the known side effects of GCs, most women thought using GCs was safe as well as did not even feel guilty about using such medications. They were using them for the long periods of time and some women were still to using them through the period of study. Some women misuse other materials such as herber and cosmetic mixtures. Other family members especially first-degree relatives may also contribute to GCs misusing which agrees with the study published by [4].

In fact, women's declared desire to gain weight and become beautiful drives them to employ hazardous weight-growth techniques. The Sultan's harem, the owl's appetizer, the Botox appetizer, and hundreds of other delicacies and therapeutic herbs were among the foods that women consumed in great quantities. Fenugreek seeds can also be eaten as a supplement to special traditional meals as well as eaten directly or added to food which agrees with the study published by [19].

Through this study, we noted that high-income women who misused GCs were more aware of the harms of GCs, but they also use herbal and other cosmetics to become beautiful or improve their physical appearance. Economics may play a significant effect on women's decisions to use GCs. Women who use GCs to improve their physical appearance definitely have different reasons, and some of this may be due to the economic pressures that women confront which was consistent to the evidence from the YRBSS study group at 2011 [23].

As a result, the need for patient education in achieving an acceptable level of self-efficacy is widely acknowledged. Patient education has been found to be effective in knowledge of the risk of misuse of drugs and enhancing self-management which is supported by A systematic review with meta-analysis done at 2012 [24] [25].

Some of the limitations were facing this study include: firstly, it is involving single tertiary center participants which may not support the generalization of the findings. secondly, there was a lack of precise duration and doses of misusing GCs by most of

the participants so that specific dose producing a unique side effect is not studied here and further studies are required in the future.

V. conclusion

The relatively high rate of misuse of these drugs can be attributed to a lack of awareness of their chronic adverse effects, as well as their widespread availability at pharmacies plus their dramatic and quick response. It is necessary to plan a strategy for limiting the overuse of these drugs by improving patient education and self-management behavior which are the focus of international efforts to minimize morbidity and mortality. These findings highlight the importance of increased patient education on the proper use of pharmaceuticals.

Government policy and community education strategy, as well as the innovation of various programs to address drugs education and drugs misuse in the field of the school curricula, reflect concern about the rising proportion of young people that who report which use drugs as well as the need for education school-based and prevention programs.

REFERENCES

[1] L. Armstrong, P. Finny, and N. T. Fracp, "Short Report Glucocorticoid misuse in a rural and semi-urban," no. July, pp. 168–170, 2012.
[2] A. D. Alwan, "Health-sector funding: options for funding health care in Iraq," EMHJ-Eastern Mediterr. Heal. Journal, 14 (6), 1372-1379, 2008, 2008.
[3] A.-M. M. Yousef, A. G. Al-Bakri, Y. Bustanji, and M. Wazaify, "Self-medication patterns in Amman, Jordan," Pharm. World Sci., vol. 30, no. 1, pp. 24–30, 2008.
[4] A. A. Mansour, A. H. Odaa, and H. L. Wanoose, "Corticosteroid nonprescription use: A cross-sectional hospital-based study in basrah," Med. Princ. Pract., vol. 19, no. 3, pp. 182–187, 2010, doi: 10.1159/000285283.
[5] R. D. Zenoble and R. J. Kemppainen, "Adrenocortical suppression by topically applied corticosteroids in healthy dogs.," J. Am. Vet. Med. Assoc., vol. 191, no. 6, pp. 685–688, 1987.
[6] C. Treloar et al., "The cross cultural context of obesity: an INCLEN multicentre collaborative study," Health Place, vol. 5, no. 4, pp. 279–286, 1999.
[7] E. Alvarez-Hernández et al., "The use of glucocorticoids by rheumatologic patients before attending a specialized department in México," JCR J. Clin. Rheumatol., vol. 14, no. 3, pp. 148–152, 2008.
[8] K. M. Nowak and L. Papierska, "Prevention and monitoring of the side effects of chronic corticosteroid therapy," Postępy Nauk Med., 2014.
[9] A. Gaffo, K. G. Saag, and J. R. Curtis, "Treatment of rheumatoid arthritis," Am. J. Heal. Pharm., vol. 63, no. 24, pp. 2451–2465, 2006.
[10] M. Pisu, N. James, S. Sampsel, and K. G. Saag, "The cost of glucocorticoid-associated adverse events in rheumatoid arthritis," Rheumatology, vol. 44, no. 6, pp. 781–788, 2005.
[11] A. Vegiopoulos and S. Herzig, "Glucocorticoids, metabolism and metabolic diseases," Mol. Cell. Endocrinol., vol. 275, no. 1–2, pp. 43–61, 2007.
[12] W. Arlt and B. Allolio, "Adrenal insufficiency," Lancet, vol. 361, no. 9372, pp. 1881–1893, 2003.
[13] L. P. C. Seguro, C. Rosario, and Y. Shoenfeld, "Long-term complications of past glucocorticoid use," Autoimmun. Rev., vol. 12, no. 5, pp. 629–632, 2013, doi: 10.1016/j.autrev.2012.12.002.
[14] A. Otlewska, G. Szpotowicz, and A. Otlewska, "Effect of glucocorticoids on the skin," Pediatr. i Med. Rodz., vol. 16, no. 3, pp. 257–260, 2020, doi: 10.15557/PiMR.2020.0047.
[15] A. Z. Farooqi, R. Aman, T. Qamar, and S. Aziz, "Corticosteroid use and abuse by medical practitioners for arthritis and related disorders in Pakistan.," Br. J. Rheumatol., vol. 36, no. 1, pp. 91–94, 1997.
[16] S. Dehghan et al., "Nonprescription Corticosteroid Use, Per Capita Consumption and Pattern of Distribution of Commonly Used Corticosteroids in Khuzestan Province Pharmacies Throughout 2016," J. Pharm. Care, pp. 159–163, 2020.
[17] S. P. Zodpey, "Principles of epidemiology and epidemiologic methods," Public Health and Nutrition in Developing Countries Part-I. pp. 1–24, 2015, doi: 10.1533/9780857093905.1.
[18] A. A. Mansour, A. A. Al-Hassan, and M. I. Al-Jazairi, "Cut-off values for waist circumference in rural Iraqi adults for the diagnosis of metabolic syndrome.," Rural Remote Health, vol. 7, no. 4, p. 765, 2007, doi: 10.22605/rrh765.
[19] M. Rguibi and R. Belahsen, "Fattening practices among Moroccan Saharawi women," East. Mediterr. Heal. J., vol. 12, no. 5, pp. 619–624, 2006.
[20] B. R. Lagos and H. I. Maibach, "Frequency of application of topical corticosteroids: an overview.," Br. J. Dermatol., vol. 139, no. 5, pp. 763–766, 1998.
[21] U. A. Igun, "Why we seek treatment here: retail pharmacy and clinical practice in Maiduguri, Nigeria," Soc. Sci. Med., vol. 24, no. 8, pp. 689–695, 1987.
[22] R. Zareshahi, A. A. Haghdoost, A. Asadipour, and B. Sadeghirad, "Rational usage of drug indices in the prescriptions of kerman medical practitioners in 2008," J. Rafsanjan Univ. Med. Sci., vol. 11, no. 6, pp. 523–536, 2012.
[23] B. R. Humphreys and J. E. Ruseski, "Socio-economic determinants of adolescent use of performance enhancing drugs: Evidence from the YRBSS," J. Socio. Econ., vol. 40, no. 2, pp. 208–216, 2011, doi: 10.1016/j.socec.2011.01.008.
[24] A. Steinsbekk, L. Rygg, M. Lisulo, M. B. Rise, and A. Fretheim, "Group based diabetes self-management education compared to routine treatment for people with type 2 diabetes mellitus. A systematic review with meta-analysis," BMC Health Serv. Res., vol. 12, no. 1, pp. 1–19, 2012.
[25] L. K. Fleming, C. G. Rapp, and R. Sloane, "Caregiver knowledge and self-confidence of stress dosing of hydrocortisone in children with congenital adrenal hyperplasia," J. Pediatr. Nurs., vol. 26, no. 6, pp. e55–e60, 2011.