

Prevalence of Using Glutathione as Whitening Agent among Saudi Girls At Makkah (Saudi Arabia), 2014: A Cross-Sectional Study

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ABSTRACT

Background: Intravenous administration of glutathione for the purpose of skin whitening is a practice that has spread throughout many countries in Africa and the far and Middle East in recent years, despite a warning bulletin put out by the Food and Drug Administration of the Philippines in 2011 that the use of glutathione administered intravenously as a skin-whitening agent at very high doses is unsafe and may result in serious consequences to the health of users.

Objectives: To get an idea of the prevalence of IV glutathione use for the purpose of skin whitening among women in Makkah, Saudi Arabia.

Subjects and Methods: A cross-sectional study was conducted over a period of five months starting from April to August of 2014, where 250 women aged 20-35 years, who had all received glutathione injections, were asked to fill out questionnaires.

Results: The study included 250 women. Most of them (69.6%) used glutathione injection for skin whitening, with significant association between reason of using glutathione injection and type of skin ($p=0.00039$). Near half of them 111 (44.4%) had 4 injections and 17 (6.8%) received over 4 doses. Regarding source of information about glutathione; 83 (73.2%) reported friend or relative who received injections. Most of the participants 181(72.4%) had no information about the injections apart from their use for skin whitening. Skin

changes were reported by 53 (21.2%) of the women after receiving glutathione. Almost two-thirds of the women 159 (63.6%) reported developing side effects such as itching, tingling, pain and transient loss of sensation. Regarding the whitening result from glutathione: 179 (71.3%) were satisfied with the results they obtained.

Conclusion: Seeking whiter skin is a common practice among Saudi women. However, many recipients are ignorant regarding true information regarding trading preparations, which warrants raising public awareness about the issue.

Keywords: Glutathione, Skin Whitening; Adverse Effects, Awareness, Saudi Arabia.

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INTRODUCTION

Glutathione is an important endogenous antioxidant that participates directly in the neutralization of free radicals and reactive oxygen compounds, as well as maintaining exogenous antioxidants such as vitamins C and E in their reduced (active) forms.^{1,2}

It is used in a range of metabolic and biochemical reactions such as DNA synthesis and repair, protein and prostaglandin synthesis, amino acid transport and enzyme activation. Thus, every system in the body can be affected by the state of the glutathione system, especially the immune system, the nervous system and gastrointestinal system and the lungs. Glutathione has also a vital function in iron metabolism.³

Immersion of definitive proof that active oxygen formation and oxidative cell damage is causative rather than result in many disease conditions; has been sufficiently compelling to suggest that antioxidants are potential therapeutic agents in numerous conditions.⁴ Recently, glutathione has gained popularity in numerous specialties as an addition to the mainstay therapies. It is being administered to cancer patients treated with cisplatin to reduce cisplatin-induced toxicity.⁵ It is also being extensively studied in the treatment of many psychiatric and neurologic disorders such as autism⁶, Schizophrenia, Parkinson's disease. Glutathione was also found to be helpful in better controlling anemia in hemodialysis patients.⁷

Another recently adopted use, the focus of this study, is the intravenous administration of glutathione for the purpose of skin whitening; A practice that has spread throughout many countries in Africa and the far and Middle East in recent years. A warning bulletin put out by the Food and Drug Administration of the Philippines in 2011 reported that "Alarming use of glutathione administered intravenously as a skin-whitening agent at very high doses is unsafe and may result in serious consequences to the health of users".⁸ The bulletin also mentioned that they suspected the drug is being administered by licensed doctors.

Glutathione is also being sold in the forms of skin whitening soaps, and oral health supplements. This is a new drug which has only recently begun to be administered to patients in trials for specific reasons, and results regarding the efficacy and safety are yet to be published. It is of major concern that most, if not all, of the subjects who receive IV glutathione for skin whitening do not realize these facts, and receive the drug knowing that it is not approved by the FDA in their country. Glutathione is not approved by the United States FDA, and is classified as a new

drug.⁹ Research involving glutathione is only just beginning; one study using topical glutathione on 30 women reported it to be safe and effective.¹⁰

The purpose of this study was to get an idea of the prevalence of IV glutathione use for the purpose of skin whitening among women in Makkah, Saudi Arabia.

SUBJECTS AND METHODS

A cross-sectional study was conducted over a period of five months starting from April to August of 2014, where 250 women aged 20-35 years, who had all received glutathione injections, were asked to fill out questionnaires.

The asked questions covered; the reason for receiving glutathione injections, how they had heard about them, and whether they were informed of the possibility of adverse effects. The women were also asked about the number of injections they received, if they were satisfied with the results and whether unwanted effects were experienced. The questionnaire was face validated by three dermatology consultants.

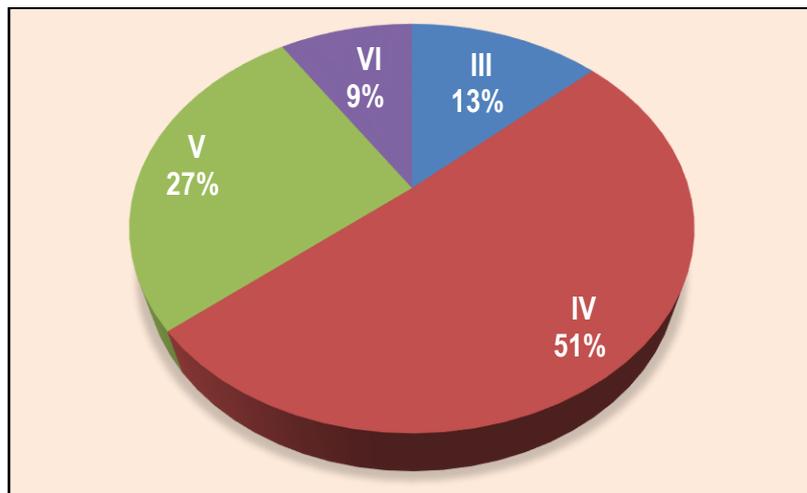


Figure 1: Distribution of the participants according to their skin type (n=250)

Table 1: Reason for having glutathione injections

	Frequency	Percentage (n=250)
For skin whitening	174	69.6
To treat areas of dark pigmentation	61	24.4
Other beauty issues*	15	6.0

Table 2: Reason for seeking glutathione according to different skin types

Skin type*	Reason for receiving glutathione injections		
	Lighter skin	Darkly pigmented areas	Other issue
III, IV (n=160)	92%	8.0	0.0
V (n=67)	21.0%	79%	0.0
VI (n=23)	34.8%	0.0	65.2%

* Using the Fitzpatrick scale for skin typing; P<0.001

Table 3: Source of information and awareness about glutathione injections for skin whitening

Information source:	Percentage
Heard about glutathione injections from a friend or relative	73.2
Heard about them through advertisements	21.2
Were informed by a dermatologist	5.6
AWARENESS:	
Had information about glutathione prior to injections*	27.6
Heard about potential dangers	7.6

*Other than the whitening effect on skin.

RESULTS

The study included 250 women. Following the Fitzpatrick scale, we categorized the participants according to their skin types into four groups (Figure 1).

The reasons for receiving glutathione injections are summarized in (Tables 1) which shows that most of them (69.6%) used glutathione injection for skin whitening, with significant association between reason of using glutathione injection and type of skin ($p=0.00039$). (Table 2)

Number of doses received was as follows: 44 (17.6) of the women had only received their first IV infusion, 12 (4.8%) had received 2 doses, 66 (26.4%) received 3 doses, 111 (44.4%) had 4 injections and 17 (6.8%) received over 4 doses.

Regarding source of information about glutathione, the participants were asked how they had heard about glutathione injections for skin whitening; 83 (73.2%) reported friend or relative who received injections; 53 (21.2%) had their information from advertisements and 14 (5.6%) from their dermatologists (Table 3). Most of the participants 181 (72.4%) had no information about the injections apart from their use for skin whitening; only 29 (27.6%) had some information. As for the possibility of dangerous adverse effects; only 19 (7.6%) had heard that there may be dangers from the injections (Table 3).

Skin changes were reported by 53 (21.2%) of the women after receiving glutathione, $p<0.001$. These included; rash, redness, dryness, darkening, thinning and skin sensitivity. Almost two-thirds of the women 159 (63.6%) reported developing side effects such as itching, tingling, pain and transient loss of sensation

Regarding the whitening result from glutathione: 179 (71.3%) were satisfied with the results they obtained, the remaining 72 (28.7%) were disappointed due to either poor skin whitening or the development of side effects. The difference was statistically significant, $p<0.001$.

DISCUSSION

In the present study, although almost two thirds of the women had naturally light skin (Type III and IV); yet most of them (92.0%) desired a whiter tone. Also, the group with type V skin opted to receive glutathione mainly to treat areas of dark pigmentations and to a lesser extent for lighter skin tone and those with type VI skin sought glutathione for beauty issues (such as reaching a better complexion or changing the way they look) and about one third for areas of dark pigmentation. This indicated that it was more likely for lighter skinned women to seek glutathione than those with darker skin tones. The same has been documented by others, who reported that women with somewhat lighter skin tend to use skin whitening preparations for positive personality traits, increased value in dating contexts and sexual appeal to men.¹¹

The data on the safety of glutathione injections are scarce.¹² In an animal-based study, no significant adverse effects were reported in dogs, who were administered up to 300 mg of glutathione per kg body weight every day for twenty six weeks.¹³ Regarding human being, parenteral glutathione was administered for male infertility in a dose of 600 mg/day intramuscularly for two months), or given to enhance insulin secretion in people with impaired glucose tolerance, did not report any significant side effects.^{14,15} On the other hand, the adverse effects of intravenous glutathione have been documented from the Philippines, one of the leading consumers of glutathione.¹⁶

The population involved in this study included women who elected to receive intravenous glutathione infusions whether they understood their potential dangers or not. Also most of them had only heard about the treatment from a friend or relative with prior experience. However, most of the women did not notice skin changes or side effects from using the injections and also showed significantly satisfaction after the glutathione injections whatever the reason of using them.

In conclusion, seeking whiter skin is a common practice worldwide. For many years skin whitening creams have been the prevalent method available and with the advent of new therapies such as skin peels and bleaching, more people (both men and women) are pursuing them.

Now we find a new drug being marketed as a skin whitening agent, and recommended to patients by some licensed doctors in clinical as well as black-market settings without prior testing or FDA approval. The fact that many recipients are ignorant to this information is concerning, and warrants raising public awareness about the issue.

The safety and effectiveness of intravenous glutathione for skin whitening is not known, and studies are much needed especially given the growing popularity of its use. We recommended spreading awareness to the public of this particular matter, and encouraging people to gain knowledge from legitimate sources is important. Also taking a closer look at glutathione with proper clinical trials if indeed it is of use in the context of skin whitening.

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