MERIT RESEARCH JOURNALS
www.meritresearchjournals.org

Merit Research Journal of Medicine and Medical Sciences (ISSN: 2354-323X) Vol. 11(10) pp. 236-241, October, 2023
Available online http://www.meritresearchjournals.org/mms/index.htm

DOI: 10.5281/zenodo.10069517

Original Research Article

Pattern of Using Semaglutide Injection among the Population in Saudi Arabia

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Abstract

Semaglutide injection with lifestyle intervention has been shown to be more effective than lifestyle modification alone. However, pharmacological intervention shows fewer side effects than bariatric surgery. This cross-sectional study was conducted among the general population in Saudi Arabia. A self-administered questionnaire was sent among the targeted population using an online survey. The questionnaire includes socio-demographic data (e.g., age, gender, marital status, etc.), general awareness about Semaglutide injection, and a 4-item questionnaire to measure the knowledge about Semaglutide. Of the 382 participants, 52.4% were males, and 44.8% were aged between 18 to 30 years old. The level of knowledge about Semaglutide injection was poor among 69.4%, while the rest had good knowledge (30.6%). The overall mean knowledge score was 1.62 (SD 1.26) out of 4 points. Younger participants, gender female, unmarried, unemployed, normal or underweight, aware of Semaglutide injection, previous usage of Semaglutide, satisfaction with Semaglutide, and knowledge about combined benefits (diabetes control and weight loss) of Semaglutide injections were the factors associated with increased knowledge score. The knowledge of the general population regarding Semaglutide injection was lacking. Younger female participants with normal body weight who were satisfied with Semaglutide were identified as the most significant users of Semaglutide injections. Further investigations are needed to extract more data about the general population's knowledge of Semaglutide injections.

Keywords: Semaglutide, Weight loss, Obesity, Overweight, Lifestyle modification

INTRODUCTION

Obesity is the most common risk factor for chronic disease. Weight reduction is an obsession among obese people as it reduces the complication of obesity and improved life quality. There are methods to reduce weight as lifestyle modification, pharmacologic intervention, and surgery bariatric and psychological intervention. Lately, semaglutide injections have shown wide use for weight loss among obese diabetic and non-diabetic patients. Semaglutide was approved by U.S. FDA in 2017 to control diabetes and, in 2021, approved for weight loss. It belongs to the family of glucagon-like peptide-1 analogs and is administered subcutaneously.

AIM AND OBJECTIVE

Objective

- To describe knowledge about using semaglutide to mange obesity among primary health care attendance

Table 1. Participants' socio-demographic characteristics[(n=382)]

Study variables	N (%)
Age group	
• 18 – 30 years	171 (44.8%)
• 31 – 40 years	96 (25.1%)
• 41 – 50 years	64 (16.8%)
• 51 – 60 years	51 (13.4%)
Gender	
• Male	200 (52.4%)
• Female	182 (47.6%)
Marital status	
• Single	162 (42.4%)
• Married	205 (53.7%)
• Divorced	15 (03.9%)
Nationality	
• Saudi	367 (96.1%)
• Non-Saudi	15 (03.9%)
Educational level	
• Illiterate or Primary school	06 (01.6%)
• Intermediate or secondary school	60 (15.7%)
• University or postgraduate	316 (82.7%)
Employment status	
• Employed	229 (59.9%)
• Unemployed	153 (40.1%)
BMI level	
• Underweight (<18.5 kg/m2)	09 (02.4%)
• Normal (18.5 – 24.9 kg/m2)	126 (33.0%)
• Overweight (25 – 29.9 kg/m2)	130 (34.0%)
• Obese (≥30 kg/m2)	117 (30.6%)

- To describe perception of using semaglutide
- To describe practice of use semaglutide

Aim

- To improve quality of life for obese patient in primary health car

Questionnaire criteria

The knowledge about Semaglutide injection has been assessed using a 4-item questionnaire, where "yes" coded with 1 and "no/I don't know" coded with 0 were the answer options. The total knowledge score has been summed up by adding all four items. Total points achieved has a range from 0 to 4 points. The greater the score, the greater the knowledge about Semaglutideinjection. Participants were considered to have poor knowledge if the score was from 0 to 2 points, and3 to 4 points were considered good knowledge levels.

Statistical Analysis

Categorical variables were given as counts and proportions (%), while continuous variables were calculated and described as mean and standard deviation. The association between the knowledge score according to the socio-demographic characteristics and general awareness about Semaglutide injection has been performed using the Mann-Whitney Z-test. Normality test (i.e., statistical collinearity) has been measured using the Shapiro-Wilk test as well as the Kolmogorov-Smirnov test. Based on the results, the knowledge score follows the abnormal distribution. There, the non-parametric test was applied.Significant level was established at the $p<0.05$ level. All data analyses were tabulated and analyzed using SPSS version 26 (Statistical Packages for Software Sciences, Armonk, New York, IBM Corporation).

RESULTS

This study enrolled 382 participants. Table 1 describes

Table 2. General awareness and experience about Semaglutide injection (n=382)

Statement	N (%)
Are you aware of Semaglutide injection?	
• Yes	244 (63.9%)
• No	74 (19.4%)
• I don't know	64 (16.8%)
Have you ever tried Semaglutide injection or your relative?	
• Yes	212 (55.5%)
• No	95 (24.9%)
• I don't know	75 (19.6%)
Was the result after the use of Semaglutide for weight loss satisfying?	
• Yes	155 (40.6%)
• No	57 (14.9%)
• I don't know	170 (44.5%)
What are the benefits of Semaglutide injections?	
• Diabetes Control	24 (06.3%)
• Weight Loss	39 (10.2%)
• Both	215 (56.3%)
• I Don't Know	104 (27.2%)

Table 3. Assessment of knowledge about Semaglutide injection (n=382)

Knowledge statement	N (%)
1. Is Semaglutide used for weight reduction and control of diabetes?	
• Yes *	236 (61.8%)
• No	14 (03.7%)
• I don't know	132 (34.6%)
2. Is Semaglutide has serious side effects?	
• Yes *	127 (33.2%)
• No	64 (16.8%)
• I don't know	191 (50.0%)
3. Is there a contraindication for using Semaglutide?	
• Yes *	200 (52.4%)
• No	09 (02.4%)
• I don't know	173 (45.3%)
4. Is Semaglutide injection alone could reduce weight?	
• Yes *	55 (14.4%)
• No	208 (54.5%)
• I don't know	119 (31.2%)
Total knowledge score (mean ± SD)	**1.62 ± 1.26**
Level of knowledge	
• Poor	265 (69.4%)
• Good	117 (30.6%)

*Indicates correct answer.

participants' socio-demographic characteristics. 44.8% were aged between 18 to 30 years old, with more than half (52.4%) being males. Respondents who were married constitute 53.7%. A vast majority of the respondents were Saudis (96.1%). Nearly all (82.7%) had university or postgraduate degrees, and 59.9% were employed. In addition, 34% of the respondents were overweight.

In Table 2, 63.9% of the respondents were aware of Semaglutide injection, and 55.5% or their relatives had tried it. Approximately 40.6% were satisfied with Semaglutide. 56.3% believed Semaglutide injections were beneficial to diabetes control and weight loss.

In the assessment of knowledge about Semaglutide injection (Table 3), it was observed that 61.8% believed that Semaglutide injection could be used for weight loss and diabetes control. Approximately 33.2% believed Semaglutide has serious side effects, while 52.4% thought it has contraindications. Only 14.4% knew that Semaglutide injection alone could be used to reduce

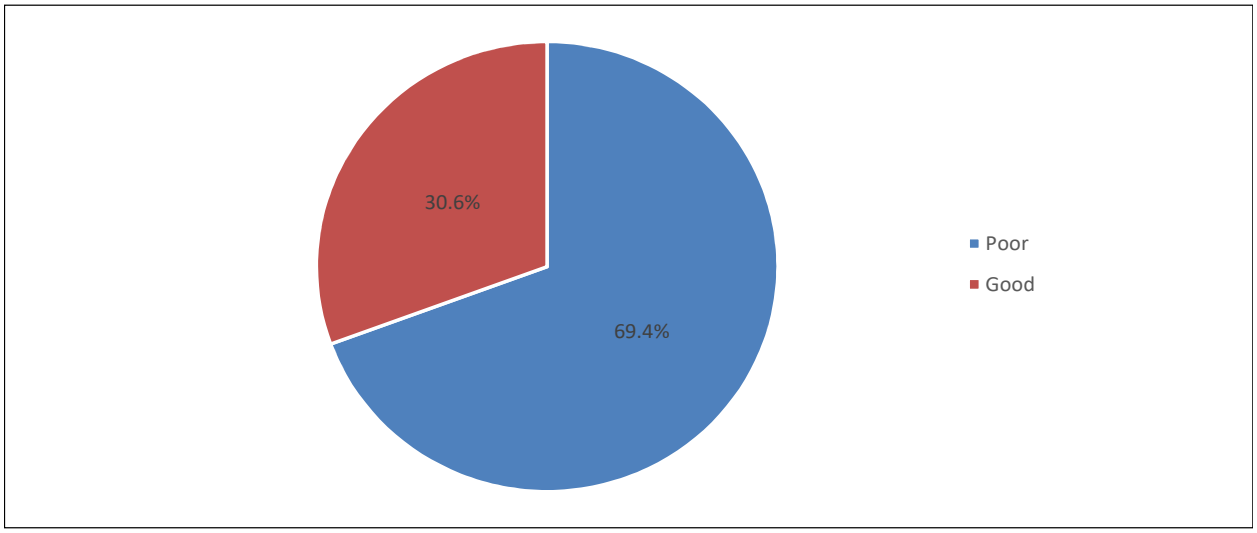

Figure 1. Level of knowledge about Semaglutide Injection

Table 4. Association between knowledge score among the socio-demographic characteristics and general awareness about Semaglutide injection[(n=382)]

Factor	Knowledge Score (4) Mean ± SD	Z-test	P-value [§]
Age group			
• ≤30 years	2.01 ± 1.21	5.567	**<0.001** **
• >30 years	1.30 ± 1.21		
Gender			
• Male	1.44 ± 1.27	2.928	**0.003** **
• Female	1.81 ± 1.22		
Marital status			
• Unmarried	1.94 ± 1.19	4.682	**<0.001** **
• Married	1.34 ± 1.25		
Educational level			
• Secondary school or below	1.42 ± 1.23	1.415	0.157
• University or postgraduate	1.66 ± 1.26		
Employment status			
• Employed	1.51 ± 1.26	2.163	**0.031** **
• Unemployed	1.78 ± 1.25		
BMI level			
• Normal or underweight	1.79 ± 1.33	2.162	**0.031** **
• Overweight or obese	1.52 ± 1.21		
Are you aware ofSemaglutide injection?[†]			
• Yes	2.23 ± 0.99	8.842	**<0.001** **
• No	0.77 ± 1.03		
Have you ever tried Semaglutide injection or your relative?[†]			
• Yes	2.14 ± 1.07	4.723	**<0.001** **
• No	1.41 ± 1.22		
Was the result after the use of Semaglutide for weight loss satisfying?[†]			
• Yes	2.26 ± 0.99	2.445	**0.014** **
• No	1.79 ± 1.21		
What are the benefits of Semaglutide injections?[†]			
• Single benefit (Either DM Control or Weight Loss)	1.69 ± 1.19	3.300	**0.001** **
• Combined benefits (DM control and Weight Loss)	2.24 ± 0.96		

[†] Respondents who said "I don't know" were excluded from the analysis.
[§] P-value has been calculated using Mann Whitney Z-test.
** Significant at p<0.05 level.

weight. Based on the above indicators, the overall mean knowledge score was 1.62 (SD 1.26), with poor and good knowledge constituting 69.4% and 30.6%, respectively (see also Figure 1).

When measuring the association between the knowledge according to the socio-demographic characteristics and the general awareness about Semaglutide injection (Table 4), it was found that a higher knowledge score was more associated with being younger (Z=5.567; p<0.001), gender female (Z=2.928; p=0.003), being unmarried (Z=4.682; p<0.001), being unemployed (Z=2.163; p=0.031), being normal or underweight (Z=2.162; p=0.031), being aware of Semaglutide injection (Z=8.842; p<0.001), ever tried or by relatives of Semaglutide injection (Z=4.723; p<0.001), satisfaction with the results of Semaglutide injection (Z=2.445; p=0.014) and believed of the combined benefits (DM control and weight loss) of Semaglutide injection (Z=3.300; p=0.001).

DISCUSSION

The present study evaluates the knowledge of the Saudi population regarding semaglutide injection. This is the first study in Saudi Arabia that measures the public understanding of the subject. Given the increasing prevalence of semaglutide use among the diabetic and non-diabetic populations, the knowledge among its users is important to discuss. The knowledge of our subjects regarding semaglutide injection was deemed insufficient. The overall mean knowledge score was 1.62 (SD 1.26) out of 4 points, and based on the given criteria, 69.4% were considered to have poor knowledge, and the rest were good (30.6%). Given that this research is novel, more investigations are warranted to provide more data about the knowledge of the population regarding semaglutide injections. Simultaneously, it is necessary to address the gaps in the knowledge. Patients who choose this medication should be properly oriented, particularly about its side effects and its contraindications. However, the proven effectiveness of such weight loss treatment may overshadow the impending negative effect as patients tend to prioritize the burden of obesity rather than the effect of the treatment.

Data from our study indicates that younger age, gender females, unmarried, normal or underweight aware of semaglutide injection, previous usage of semaglutide, satisfied with semaglutide, and knowledge about the combined benefit (DM control and weight loss) of semaglutide were the significant predictors of increased knowledge. While our study determines the association between knowledge and participants' various characteristics, some papers established the effective-ness of semaglutide injections by conducting clinical trials (CTs) among weight loss seekers. These published CTs may have been one of the reasons for an increasing trend of semaglutide injection used. For instance, in a clinical trial conducted by (Weghube et al., 2023), among semaglutide group, they found that 73% of the patients achieved 5% weight loss at week 68 as compared to the placebo group (p<0.001). In USA (Kelly et al., 2022), there was a decrease in the prevalence of patients with obesity class III, from 37.3% to 13.6% among semaglutide-treated patients, but placebo-treated patients had an increased rate. The likelihood ratio for yielding an improvement of at least one BMI category was significantly higher with semaglutide in comparison with placebo. Among 102 patients who were following up for six months (Ghusn et al., 2022), weight loss of 5% or more was achieved by 87%, weight loss of 10% or more was achieved by 54.9%, 15% or more was achieved by 23.5% and 20% or more were achieved by 7.8%. Adding that compared to patients without type 2 diabetes, patients with type diabetes had a lower mean percentage weight loss at 3 and 6 months follow-up.

Regarding the specific details of knowledge, many respondents (61.8%) knew that semaglutide is used for weight reduction and diabetes control. Also, respondents were moderately aware that semaglutide had contra-indications (52.4%). However, our subjects showed a lack of knowledge that semaglutide might result in a serious side effect (33.2%). In addition, they have limited knowledge that semaglutide injection alone could reduce weight (14.4%). Semaglutide adverse-related events were also discussed in the literature. In one of the CTs published in South East Asia (Kadowaki et al., 2023), 118 out of 199 (59%) participants experienced gastrointestinal disorders in the semaglutide 2.4 mg group, 64% in the semaglutide 17 mg group and 30% in the placebo group. Trial discontinuation due to adverse events occurred in 7% ofall groups. In Makkah (Xiang and Liblik, 2022), the most common adverse effect of patients treated with semaglutide was gastrointestinal disorders, including nausea, vomiting, constipation, abdominal cramps and diarrhea. However, according to the report of Shu et al. (2022), they found that gastrointestinal adverse events (AEs) were associated with the patient's age and body weight but not with gender, adding that the risk of gastrointestinal adverse events occurrence slowly decreases over time. The improved physical functions and better quality of life were documented in semaglutide 2.4 mg (Bergmann et al., 2023).

Moreover, a great proportion of our respondents (63.9%) were aware of semaglutide injection, and at least 55.5% had tried, or their relatives tried, this type ofweight loss treatment. Satisfaction with the treatment reached 40.6%. In addition, 56.3% believed that both diabetes control and weight loss were the beneficial outcomes of semaglutide injections. In Germany (Meier, 2021), findings suggest that both semaglutide injectable and oral formulations offer the benefits of a greatly effective GLP-1RA. The most appropriate formulation was chosen according to individual preference that suits the patient's

needs. This was supported by the study done in USA (Chao et al., 2022), reporting that anti-obesity semaglutide injections were an adjunct to physical exercise anda reduced-calorie diet helps patients accomplish average losses at week 68 of 9.6-17.4% of initial body weight, resulting in improvements in psychosocial and cardiometabolic indices.

CONCLUSION

The knowledge of the general population regarding Semaglutide injections was inadequate. However, younger females with better education who had a previous history of Semaglutide use tended to be more knowledgeable about Semaglutide injections than the rest of the population. There's a need to increase the knowledge about Semaglutide injections, particularly among the diabetic population and those who wish to reduce weight. Since the idea of this research is novel, further l ongitudinal studies are recommended to extract more data about the knowledge and awareness of the general population regarding Semaglutide injections.

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