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Demographics and sexual characteristics of sex-enhancing medication users: Study of a web-based cross-sectional sample of sexually active men



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KEYWORDS

Characteristics;
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ABBREVIATIONS

ED, erectile dysfunction;
IIEF-5, five-item version of the International Index of Erectile Function;

Abstract Objectives: To evaluate the frequency of sex-enhancing medications (S-EM) use and to investigate the demographics and sexual characteristics of the S-EM users amongst a Saudi Arabian male population.

Subjects and methods: A cross-sectional sample of 1176 Saudi Arabian men was recruited using a web-based survey between 1 January and 1 April 2015. The survey included multiple open and closed questions to assess the frequency of S-EM use; and demographics, clinical, and sexual characteristics of S-EM users, as well as their perceptions of S-EM.

Results: Amongst the participants, 1008 were sexually active and included in the data analysis. Of the sexually active participants, 402 (39.9%) reported S-EM use in the form of herbal or phosphodiesterase type 5 inhibitors at some time in their lives. Comparing S-EM users with S-EM non-users, the S-EM users had a number of demographic and sexual characteristics including: higher education level, higher income, smoking, more than one sexual partner, longer sexual activity duration, higher frequency of sexual intercourse, and lower sexual satisfaction level. Most

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PDE5i, phosphodiesterase type 5 inhibitors; S-EM, sex-enhancing medications

of the S-EM users (82.1%) bought S-EM without a medical prescription and 62.5% had used them recreationally. In all, 52% of respondents used S-EM to treat ED and 69% of those who used it recreationally reported enhancement of erection with S-EM usage.

Conclusions: Demographic and sexual characteristics of S-EM users and the attitude of the users towards the S-EM were identified amongst a Saudi Arabian male population.

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Introduction

Male erectile dysfunction (ED) was defined by the National Institute of Health consensus in 1990 [1] as an inability to perform satisfactory sexual intercourse due to insufficiency in achieving or maintaining erection. This fundamental physiological activity has a major effect on the personal wellbeing and quality of life for patients and their families [2–4]. In a previous worldwide study [5], ED was shown to be a common health problem affecting >150 million males, with a predicted potential to double by the year 2025 due to the increasing life-span of the population. The treatment strategies for ED vary from psychotherapy and oral pharmacotherapy to surgery that is dependent on the cause of ED, which requires precise patient assessment by a specialist [6,7].

With the discovery of oral phosphodiesterase type 5 inhibitors (PDE5i), the use of sex-enhancing medications (S-EM) became more appealing to a large majority of males with ED, irrespective of the nature of their problem. Moreover, the use of S-EM has become more recreational, especially amongst the young [8–11].

There have been a few research investigations [2,11,12] of different magnitudes exploring the prevalence and characteristics of ED, and patterns of S-EM use in the Middle East. As data on ED is very variable from region to region around the world due to socioeconomic standards, demographics, racial, ethnic, as well as cultural and religious diversity, in the present study we pursued the aim of elucidating the frequency and pattern of S-EM use, demographics and sexual characteristics of S-EM users and their perception of S-EM use amongst a Saudi Arabian male population based on a web-based survey.

Subjects and methods

This study was designed as a web-based nationwide survey, distributed electronically (direct e-mail and social media), in which 1176 men aged >18 years were included between 1 January and 1 April 2015. All participants provided informed consent for using their private information in this study.

A preliminary pilot study was conducted on 30 sexually active men, with face-to-face interviews, in order to determine the validity of the questions in conjunction with the researchers' opinion for final adjustment before induction of the survey. The University Review Board Committee, according to the current policies and procedures of the institution, approved this study. All data were collected anonymously and kept confidential for research purposes only.

The questionnaire used in the survey has been published [13] and we therefore describe it only briefly here. The survey was based on 36 open and closed questions, which were divided into three major parts: demographic and clinical characteristics, sexual characteristics, and assessment of S-EM perception amongst sexually active participants. Erectile function was assessed using a validated Arabic version of the five-item version of the International Index of Erectile Function (IIEF-5) questionnaire, where a score of ≤ 21 was used to define ED [14].

Data were collected, tabulated and presented as number and percentage or mean and standard deviation (SD). The participants were divided into two groups: S-EM users and S-EM non-users and the differences between groups were evaluated using the independent samples Mann–Whitney *U*-test, chi-squared test or Fisher's exact test. The correlation between erection level and S-EM use was evaluated using Pearson's correlation coefficient. All data analyses were performed using the Statistical Package for the Social Sciences (SPSS®, version 20; SPSS Inc., IBM Corp., Armonk, NY, USA) and an $\alpha < 5\%$ was considered to indicate statistical significance.

Results

Of 1176 participants in this survey, 1008 were sexually active and included in the data analysis. Of the sexually active participants, 402 (39.9%) used S-EM in the form of herbal or PDE5i during their lives. Most of S-EM users (67.2%) were aged ≤ 45 years. The number of smokers was higher amongst the S-EM users compared to non-users group (55.2% vs 25.7%; $P < 0.001$). The participants who had more than one sexual partner were

significantly higher amongst S-EM users (7.5% vs 1%; $P < 0.001$). However, the vast majority in both groups (96.4%) had a single sex partner.

Apart from ED, 312 (31%) of all participants had various chronic health problems. The prevalence of chronic health problems was significantly higher in S-EM users (35.8% vs 27.7%; $P = 0.006$). The types of chronic health problems, regular medications used, as well as other clinical and demographic characteristics of S-EM users and non-users are provided in [Table 1](#).

Erection problems were reported by 222 (22%) of all participants, comprised of 150 (37.3%) S-EM users and 72 (11.9%) S-EM non-users. There was no significant difference between S-EM users and S-EM non-users for the mean (SD) IIEF-5 scores, at 13.20 (4.98) vs 12.79 (2.37) ($P = 0.613$). Only 96 (23.9%) of S-EM users were seeking medical consultations for sexual problems. A total of 546 (54.2%) had a sexual intercourse frequency of 2–3/week, amongst them 264 (65.7%) were S-EM users. More than one-third (36.3%) of participants were identified as having ejaculation problems, but only 42.6% of those were S-EM users. Sexual satisfaction level, evaluated using a simplified questionnaire (score ranging from 1 to 5), showed that only 210 participants (20.8%) had a high level of satisfaction and of them only 22.9% were S-EM users. There were significant positive correlations between erection level and S-EM use ($r = 0.267$, $P < 0.001$) and between erection level and sexual satisfaction, overall and in the S-EM users and non-users groups ($r = 0.620$, $P < 0.001$; $r = 0.561$, $P < 0.001$; $r = 0.527$, $P < 0.001$, respectively). The sexual characteristics of S-EM users and non-users are provided in [Table 2](#).

The following results pertain to only those participants reporting S-EM use and are shown in [Table 3](#). Of 402 S-EM users, only 72 (17.9%) acquired S-EM with a medical script. Tadalafil was found to be the most popular medication used (43.3%), followed by sildenafil (19.4%). In all, 28.4% of S-EM users had used more than one type of S-EM. However, the analysis showed that most (70.1%) were using S-EM irregularly. The main reasons for S-EM usage were for treatment of ED (37.5%), followed by curiosity (26.1%), and enhancing self-confidence (18.4%). Regarding the awareness of side-effects, most of the S-EM users (86.6%) had knowledge about drug side-effects, but only about half (53.7%) had read the information about the medication provided in the enclosed leaflet. In all, 67.2% found S-EM rather expensive and more than two-thirds (71.6%) informed their sexual partners about usage of S-EM. In all, 62.7% of S-EM users (52% of ED users and 69% of recreational users) reported enhancement of erection with S-EM usage; however, only 24.4% reported improvement of ejaculation. In all, 31.3% of S-EM users reported drug-related side-effects.

Discussion

The desire to achieve an optimal sexual performance for men is a longstanding preoccupation. Although traditional physicians around the world have been working on creation of a magic ‘love pill’ for many centuries, the S-EM group of medications has become available as a result of many advances in modern medicine and development of pharmaceutical science in recent decades.

Since the introduction of PDE5i medications in Saudi Arabia, they have become popular and widely used amongst Saudi men. In a local study by Alahdal et al. [15], questionnaires were distributed to a 100 community pharmacies to investigate the use pattern of PDE5i in Saudi Arabia. The study included 500 men aged >18 years, who sought oral PDE5i from community pharmacies. Their results showed that 80% of respondents had been taking S-EM without consultation with their doctors. Our present results appear to support this, showing that only 17.9% of S-EM users acquired S-EM with a medical script. Pharmacists in Saudi Arabia report that S-EM customers are of all ages, from 20 to 70 years, but that most of those asking for the ‘love pill’ tend to be young men aged 30–40 years [16]. These facts could be explained by some specific cultural, educational and religious factors, which encourage Saudi men to explore and experiment with such medications.

A number of epidemiological studies have reported a high prevalence of ED in Arab countries and its correlation with risk factors [16,17]. The present study correlates well with other investigators showing an increase in prevalence of ED with age. In all, 22% of the eligible respondents of our targeted population reported erection problems, but only 67.6% of them were using S-EM. This fact may be explained by the insufficient level of awareness or education amongst non-users; however, a limitation of the present study methodology was that we could not assess other reasons.

It is not surprising that men of all ages will use S-EM to help them continue to have a satisfying sexual life. This probably explains the increased demand for male-potency medications in Saudi Arabia in recent years when these medications became freely available.

Highly educated males have shown higher consumption of S-EM, which probably reflects affordability for this group and a high level of awareness and knowledge of possible side-effects.

About one-third of respondents in the present study had chronic medical problems and of them 46.1% were S-EM users. There were significantly more participants with chronic medical problems in the S-EM users group. Furthermore, the duration of sexual activity was significantly higher in S-EM users compared to the non-users group. This fact most probably indicates the importance of maintaining personal quality of life for men with ED

Table 1 Demographics and clinical characteristics of study population.

Variable	Total, <i>n</i> (%) (<i>n</i> = 1008)	S-EM users, <i>n</i> (%) (<i>n</i> = 402)	S-EM non-users, <i>n</i> (%) (<i>n</i> = 606)	<i>P</i>
Age group, years				< 0.001
18–25	36 (3.6)	18 (4.5)	18 (3.9)	
26–30	204 (20.2)	30 (7.5)	174 (28.7)	
31–35	186 (18.5)	60 (14.9)	126 (20.8)	
36–40	240 (23.8)	108 (26.9)	132 (21.8)	
41–45	114 (11.3)	54 (13.4)	60 (9.9)	
> 45	228 (22.6)	132 (32.8)	96 (15.8)	
Education level				< 0.001
Low	36 (3.6)	12 (3.0)	24 (4.0)	
Middle	168 (16.7)	294 (73.1)	510 (84.2)	
High	804 (79.8)	96 (23.9)	72 (11.9)	
Occupation sector				< 0.001
Jobless	24 (2.4)	12 (3.0)	12 (2.0)	
Education	186 (18.5)	60 (14.9)	126 (20.8)	
Health field	240 (23.8)	90 (22.4)	150 (24.8)	
Military	150 (14.9)	96 (23.9)	54 (8.9)	
Administration	216 (21.4)	72 (17.9)	144 (23.8)	
Engineering	78 (7.7)	36 (9.0)	42 (6.9)	
Business	48 (4.8)	12 (3.0)	36 (5.9)	
Other	66 (6.5)	24 (6.0)	42 (6.9)	
Household income				0.001
Low	42 (4.2)	18 (4.5)	24 (4.0)	
Middle	294 (29.2)	144 (35.8)	150 (24.8)	
High	672 (66.7)	240 (59.7)	432 (71.3)	
Smoking				< 0.001
Non-smoker	630 (62.5)	180 (44.8)	450 (74.3)	
Smoker	378 (37.5)	222 (55.2)	156 (25.7)	
Number of sex partners				< 0.001
1	972 (96.4)	372 (92.5)	600 (99.0)	
≥ 2	36 (3.6)	30 (7.5)	6 (1.0)	
Duration of sexual activity, years				< 0.001
1	60 (6.0)	24 (6.0)	36 (5.9)	
1–5	264 (26.2)	68 (16.9)	196 (32.3)	
5–10	194 (19.2)	80 (19.9)	114 (18.8)	
> 10	490 (48.6)	230 (57.2)	260 (42.9)	
Chronic health problems				0.006
No	696 (69.0)	258 (64.2)	438 (72.3)	
Yes	312 (31.0)	144 (35.8)	168 (27.7)	
Type				0.004
Diabetes mellitus	72 (23.1)	30 (20.8)	42 (25.0)	
Cardiovascular disease	42 (13.5)	12 (8.3)	30 (17.9)	
Hyperlipidaemia	66 (21.2)	42 (29.2)	24 (14.3)	
Others	37 (11.9)	20 (13.9)	17 (10.1)	
> 1 health problem	95 (30.4)	40 (27.8)	55 (32.7)	
Use of regular medications:				0.003
No	714 (70.8)	264 (65.7)	450 (74.3)	
Yes	294 (29.2)	138 (34.3)	156 (25.7)	
Class				0.002
Anti-diabetics	68 (23.1)	26 (18.8)	42 (26.9)	
Anti-hypertensives	40 (13.6)	12 (8.7)	28 (17.9)	
Anti-hyperlipidaemics	57 (19.4)	40 (29.0)	17 (10.9)	
Antacids	15 (5.1)	8 (5.8)	7 (4.5)	
Others	27 (9.2)	12 (8.7)	15 (9.6)	
Multiple medications	87 (29.6)	40 (29.0)	47 (30.1)	

and their families, for men with chronic medical problems, and longer duration of marriage.

Our present study revealed that only 11.6% of all sexually active respondents were seeking medical consultations for ED. However, it is well established by many

studies that decreased sexual activity and ED has a strong correlation with multiple risk factors and should be treated with an understanding of the underlying causes before S-EM can be prescribed for safe usage. The assumption that S-EM can treat all causes of ED

Table 2 Sexual characteristics of study population.

Variable	Total, <i>n</i> (%) (<i>n</i> = 1008)	S-EM users, <i>n</i> (%) (<i>n</i> = 402)	S-EM non-users, <i>n</i> (%) (<i>n</i> = 606)	<i>P</i>
Erection problem				< 0.001
No	786 (78.0)	252 (62.7)	534 (88.1)	
Yes	222 (22.0)	150 (37.3)	72 (11.9)	
Erection level (using simplified questionnaire)				< 0.001
1 (very weak)	36 (3.6)	18 (4.5)	18 (3.0)	
2	54 (5.4)	36 (9.0)	18 (3.0)	
3	326 (32.3)	162 (40.3)	164 (27.1)	
4	370 (36.7)	156 (38.8)	214 (35.3)	
5 (excellent)	222 (22.0)	30 (7.5)	192 (31.7)	
Ejaculation problem				0.179
No	642 (63.7)	246 (61.2)	396 (65.3)	
Yes	366 (36.3)	156 (38.8)	210 (34.7)	
Type				0.013
Premature ejaculation	294 (80.3)	120 (76.9)	174 (82.9)	
Painful ejaculation	6 (1.6)	36 (23.1)	6 (2.9)	
Delayed ejaculation	66 (18.0)	0 (0.0)	30 (14.3)	
Previous medical consultation for sexual problem				< 0.001
No	891 (88.4)	306 (76.1)	585 (96.5)	
Yes	117 (11.6)	96 (23.9)	21 (3.5)	
Frequency of sexual intercourse				< 0.001
≤1/week	300 (29.8)	96 (23.9)	204 (33.7)	
2–3/week	546 (54.2)	264 (65.7)	282 (46.5)	
> 3/week	162 (16.1)	42 (10.4)	120 (19.8)	
Sexual satisfaction level (using simplified questionnaire)				< 0.001
1 (unsatisfied)	48 (4.8)	24 (6.0)	24 (4.0)	
2	84 (8.3)	36 (9.0)	48 (7.9)	
3	336 (33.3)	174 (43.3)	162 (26.7)	
4	330 (32.7)	120 (29.9)	210 (34.7)	
5 (satisfied)	210 (20.8)	48 (11.9)	162 (26.7)	

is wrong and probably explains why some respondents who tried S-EM did not achieve a desirable effect.

The Alahdal et al. [15] study, showed that 77.7% of respondents acquired S-EM after consultations with pharmacists or via advertisements and advice of friends, and only 19.9% had a proper medical consultation. Moreover, such behaviour can cause significant health damage in some groups of ‘love pill’ users and in rare instances even result in death. Publications have described men who have died during sexual intercourse, which is a recognised serious complication, although it is not clear if these deaths were directly related to S-EM use [18–20]. Thus, the appropriate thorough evaluation by physician for the presence of associated health factors and psychological assessment is paramount.

Although, a significant percentage of S-EM customers request them from curiosity only, without consideration or knowledge of possible side-effects, to the best of our knowledge, there has been no published systematic approach in evaluating the understanding of the S-EM concept by Saudi Arabian men. Therefore, a nationwide survey was necessary to identify the correlation between ED problems and conceptual understanding of S-EM.

One of the limitations of the present study was the evaluation of erection level using a simplified questionnaire, which was graded from 1 to 5. This subjective evaluation was used because of the study design to achieve a better response from participants. In another web-based survey, in which erection and its correlation with ageing, sexual behaviours and risk factors was studied, erectile function was assessed using the Erection Hardness Score [21]. However, this type of erection assessment also has its own limitations. Also, it was difficult to identify a correlation between the improvement in sexual function and sexual satisfaction, and S-EM use. More likely it can be explained by subjectivity in evaluation, which depends on many factors related to personal experiences, history of sexual activity of respondents, and certain limitations of a web-based survey that included only internet users.

Conclusion

We think the present study helps to identify the characteristics of S-EM users and understand the attitude towards S-EM usage in various socio-economic groups of Saudi Arabian men. Despite some limitations, the

Table 3 Sub-analysis of S-EM users.

Variable	N (%)
Acquisition method	
Without prescription	330 (82.1)
With prescription	72 (17.9)
Acquisition form	
Tablet/capsule	246 (61.2)
Package	156 (38.8)
Types	
Sildenafil (Viagra)	78 (19.4)
Tadalafil (Cialis)	60 (14.9)
Vardenafil (Levitra)	12 (3.0)
Tadalafil (Snafi)	114 (28.4)
Herbal	24 (6.0)
More than one type	114 (28.4)
Main reason for its usage	
Treatment of ED	150 (37.5)
Curiosity	105 (26.1)
Enhancing erection duration	46 (11.4)
Enhancing self confidence	74 (18.4)
Improving ejaculation problems	27 (6.7)
Frequency	
Weekly	48 (11.9)
Monthly	72 (17.9)
Irregular	282 (70.1)
Knowledge about side-effects	
No	54 (13.4)
Yes	348 (86.6)
Reading drug enclosed leaflet	
No	186 (46.3)
Yes	216 (53.7)
The perception of the cost	
Unknown	30 (7.5)
Fair	90 (22.4)
Cheep	12 (3.0)
Expensive	270 (67.2)
Knowledge of sex partner	
Not informed	114 (28.4)
Informed	288 (71.6)
Improvement of erection	
Unknown	78 (19.4)
No	72 (17.9)
Yes	252 (62.7)
Improvement of ejaculation	
Unknown	12 (7.7)
No	106 (67.9)
Yes	38 (24.4)
Reported side-effects	
Unknown	24 (6.0)
No	252 (62.7)
Yes	126 (31.3)

present study probably is a good reflection of the Saudi Arabian male population in general.

Conflict of interest

None.

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