

Title: WOMEN'S PERCEPTION OF MALE ERECTILE DYSFUNCTION DRUGS
IN THE GENERAL POPULATION

Authors: Koji Mita¹, Masanobu Shigeta¹, Masayuki Kakehashi², Akio Matsubara¹,
Jun Teishima¹, Masao Kato¹, Mitsuhiro Seki¹, Yasuhisa Hasegawa¹, Yoji Inoue¹,
Tsuguru Usui¹

Institute: ¹Department of Urology, Graduate School of Medical Sciences, and
²Department of Health Informatics, Graduate School of Health Sciences,
Hiroshima University, Hiroshima, Japan

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ABSTRACT

Objective

The aim of this study is to investigate trends in women's perception of male erectile dysfunction (ED) drugs in the general population.

Methods

We designed an online questionnaire survey and randomly invited an initial total of 2,370 women to respond to it from a database population that included 450,000 men and women recruited through an internet-based market research company. The 17 items of the questionnaire comprised 9 items related to socio-cultural background and 8 items related to the perception of ED drugs, ED itself, and sexual relations.

Results

A total of 1,262 women (53.2% of those initially invited), ranging in age from 20 to 77 years, participated. Among the participants, 83.3% were aware of the existence of ED drugs, but only 12.0% showed some interest in them; 46.4% and 43.2% of the participants claimed to have an unfavorable image of ED drugs, and of men using ED drugs, respectively. Among the participants, 45.2%

stated that if their partners suffered from ED at present or in the future, they would not desire their partners to use ED drugs, and 25.5% stated that they would not accept it. Multiple logistic regression analysis revealed that higher age had a negative impact on knowledge, interest and image of ED drugs, the image of men using ED drugs, and the importance of sexual relations.

Conclusions

Our findings reveal that a high proportion of women have a negative perception of ED drugs and associated issues in Japan.

TEXT

Objective

Because the treatment of male erectile dysfunction (ED) also has a direct influence on female sexual function, the use of ED drugs is considered to impact on both male and female sexuality [1]. However, it has been reported that women participating in focus group discussions in three different Asian countries viewed the possibility of their husbands starting to take ED drugs with suspicion, mistrust and fear [2]. Therefore, clarification of women's perception of ED drugs is helpful for enabling good communication between women and their male partners regarding ED-related problems. The aim of this study was to investigate trends in women's perception of ED drugs and to reveal any factors related to negative perception of ED drugs for women in this context.

Participants and Methods

We designed an online questionnaire survey through an internet-based market research company (Yahoo Japan! Research, Tokyo, Japan) that enrolled 450,000 men and women. The women were allocated to five age groups: 20s, 30s, 40s, 50s, and 60s or older. A total of 2,370 women, an almost equal number from each group, were then randomly invited to participate in this study in September 2005. Of these women, 1,342 opted to receive the questionnaires. Information about age, experience of childcare, occupation, and size of town or city of residence had already been registered for all of the participants. Because no previously validated questionnaire was available, we designed our original questionnaire and it is presented in the Appendix.

The 17 items of the questionnaire comprised 9 items related to socio-cultural background factors, of which 4 were in the registered information and 5 were in the questionnaire, and 8 items related to the perception of ED drugs, ED itself, and sexual relations. Regarding the responses to the questionnaire, the following categories were defined: "yes" / "if pressed to say, yes" / "yes, probably" / "a little" were classified as the "yes" category, while "no" / "if pressed

to say, no" / "not especially" / "not much" were considered to belong to the "no" category. In the same way, "favorable" / "if pressed to say, favorable" were considered to belong to the "favorable" category, while the answers "unfavorable" / "if pressed to say, unfavorable" were considered to belong to the "unfavorable" category.

Using the 9 factors related to socio-cultural background as independent variables, multiple logistic regression analysis was carried out to identify which factors significantly influenced women's negative perception of ED drugs, ED itself, and the importance of sexual relations (Q-6, Q-7, Q-8, Q-9, Q-10 and Q-11 in Appendix).

Next, to identify which factors were related to negative attitudes of women towards the use of ED drugs by their partners, two representative items (Q-12 and Q-13 in Appendix) were selected as dependent variables and analyzed against the remaining 15 items by multiple logistic regression analysis.

While carrying out these analyses, focus was placed on negative responses in the strongest category, such as "no" or "unfavorable", and all hypotheses demonstrating a value of $P < 0.05$ were considered to be significant.

Results

Overall questionnaire responses and participants' registered information (Table

1)

A total of 1,262 (53.2%) of the 2,370 women initially invited were evaluated as participants in this study. The participants ranged in age from 20 to 77 years.

Among the participants, 83.3% (n=1051) were aware of the existence of ED drugs, but only 12.0% (n=151) showed some interest in them. An unfavorable

image of ED drugs was reported by 46.4% (n=586) of the participants, and 43.2% (n=545) had an unfavorable image of men using ED drugs, whereas only

20.0% (n=252) claimed to have an unfavorable image of men suffering from ED.

Among the participants, 45.2% (n=571) stated that if their partners suffered from ED at present or in the future, they would not desire their partners to use ED

drugs, and 25.5% (n=322) stated that they would not accept it.

Overlaps between image of ED drugs and its associated responses (Table 2)

An unfavorable image of ED drugs and a lack of interest in them were shown by 64.2% (n=486) and 86.5% (n=909) of the 1051 respondents, respectively,

who claimed to be already aware of ED drugs. On the other hand, 47.4% (n=100) of 211 respondents who had been unaware of ED drugs claimed to have an unfavorable image of such drugs. The items related to the image of ED drugs drew responses that were approximately proportional to those for items related to men using ED drugs. Of the 586 respondents who had an unfavorable image of ED drugs, 29.7% (n=174) stated that if their partner suffered from ED they would desire their partners to use ED drugs, and 49.3% (n=289) stated that they would accept it.

Relationship of socio-cultural background factors to women's negative perception of ED drugs, ED itself, and the importance of sexual relations

Negative perceptions of several items related to ED drugs and of sexual relations were found to increase significantly as the age of the respondent became higher, and the effect was assumed to be linear among the five age groups: i.e., a higher age was related to a lack of knowledge of ED drugs (odds ratio (OR)=1.283, P=0.0002), a lack of interest in ED drugs (OR=1.241, P=0.0064), an unfavorable image of ED drugs (OR=1.106, P=0.0412), an

unfavorable image of men using ED drugs (OR=1.157, P=0.0034) and lack of importance of sexual relations (OR=1.324, P<0.0001). Among the other socio-cultural background factors, the following were identified: lack of religious affiliation was related to both a lack of interest in ED drugs (O.R.=1.558, P=0.0302) and lack of importance of sexual relations (O.R.=1.465, P=0.0126), a low educational background was related to an unfavorable image of men using ED drugs (O.R.=0.697, P=0.0026), lack of economic satisfaction was related to lack of knowledge about ED drugs (O.R.=1.438, P=0.0317), and no occupation was related to a lack of interest in ED drugs (O.R.=1.620, P=0.0178). However, no other socio-cultural background factors were significantly related to the above perceptions of ED drugs, ED itself, and sexual relations.

Factors related to women's negative attitudes toward their partners using ED drugs

Unfavorable images of ED drugs, of men using ED drugs, and of men suffering from ED were revealed to be significantly important factors affecting women's negative attitudes toward their partners using ED drugs, as was the

case with age, a lack of interest in ED drugs, and a lack of importance of sexual relations (Table 3). No other socio-cultural background factors or knowledge of ED drugs were significantly related to women's negative attitudes toward their partners using ED drugs.

Discussion

Trends in women's perception of ED drugs in the general population

To our knowledge, this is the first cross-sectional study to have investigated women's perception of ED drugs in the general population. Our findings revealed a wide gap between knowledge of, and interest in, ED drugs, and a particularly notable feature was the high proportion of women who had an unfavorable image of ED drugs and of men using them. However, the difference in the responses of women to the image of ED drugs, the image of men using them, and men suffering from ED appear to suggest that women differ in their perception of ED drugs and that of ED itself. The fact that 47.4% of the 211 women who claimed to have no knowledge about ED drugs stated that they had an unfavorable image of such drugs suggests some preconceived prejudice against such drugs. Apart from the lack of interest in ED drugs and lack of importance of sexual relations, the unfavorable attitude of women towards ED drugs was significantly related to a negative attitude towards their partners using such drugs. These findings indicated that women's image of ED drugs is one of the most important issues in this context. On the other hand, in

the event that their partners were to suffer from ED, 29.7% and 49.3% of the 586 respondents with an unfavorable image of ED drugs expressed a desire for their partners to use ED drugs and stated that they would accept their partners using them, respectively. These results indicate that some women might acknowledge the virtues of ED drugs implicitly, even though many claimed to have an unfavorable image of such drugs. Although numerous studies have confirmed the safety and efficacy of ED drugs [3], a substantial period of time is still required before ED drugs become widely accepted nationwide in Japan. One of the limitations of the present study was that it did not investigate why women have negative perceptions of ED drugs. The reasons for this attitude may be related to misunderstanding about ED drugs and their side effects, or an unwillingness to perceive their partners as being impotent. Further study is needed to resolve these issues.

Socio-cultural background factors related to negative perception of ED drugs among women

Among the socio-cultural background factors, this study revealed that higher

age had a negative impact on several perceptions related to ED drugs and the importance of sexual relations. Although a woman's hormonal environment shows dynamic changes in the peri-menopausal period [4], age is reported to be the most important factor related to female sexual activity and function, whereas menopausal status shows only a minimal association [5]. Moreover, while men and women continue to show sexual interest and activity into middle age and beyond, differences in sexual attitudes between younger and older women have been reported [6]. However, the present study did not directly represent the change in women's perception of ED drugs with aging, and because this was a cross-sectional study, a cohort effect could not be ruled out.

Apart from age, our study revealed some significant relationship between socio-cultural factors and negative responses related to ED drugs. A previous report has indicated that the predominant influences on sexual attitudes and behavior are cultural and religious [6]. Also, age, level of education, and the presence or lack of a sexual partner are reported to significantly influence sexual desire and ability to experience orgasm [7]. Because the prescription of ED drugs is not covered by the health insurance system in Japan, the ability of

individuals to pay for ED medication depends on their economic situation.

Given the important influence of the issues on intra-marital relationships and sexual satisfaction, one of the most important psychosocial issues to consider is occupation [8]. No occupation may have a negative impact on the quality of life, including lack of sexual activity.

Online questionnaire about ED drugs

Access to the internet may also be biased with regard to age, sex, education and other factors. A substantial proportion of the general population may be unfamiliar with Web questionnaires [9]. However, thanks to recent improvements in the infrastructure for information technology, the internet is now widely available in Japan [10]. Comparison of a 'gold standard' randomly selected population-based national sexual life survey (The Swedish Sexual Life Survey) with an internet-based survey showed that internet samples were comparable in terms of relationship characteristics and history [11].

Information and education about ED drugs for women

As ED is no longer just considered to be a male sexual problem worldwide, the importance of therapeutic approaches involving female partners has now been reported [12]. However, while the proportion of male subjects who have discussed ED with their partner will increase as ED drugs become more widespread, 40% of men claim never to have done so [13]. Moreover, although sexual dysfunction is common in middle age, several background factors appear to prevent individuals from seeking medical help in relation to sexual interest and activity [6,14]. To achieve an optimal outcome, evaluation and treatment of ED should be aimed at a single unit, i.e. within the context of a couple, and be incorporated into the single category of sexual medicine [15]. In the light of our present results and those of previous studies, it appears that women in the general population need to be better informed and educated about ED drugs in order to improve their conceptions of such drugs and related issues, focusing especially on middle-aged and elderly individuals.

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Appendix

<Socio-cultural background>

Q-1) <Educational background>

What is your highest level of education?

Junior high school/High school/Junior college/University/Graduate

school/Other

Q-2) <Marital history>

Are you married?

Yes/Divorced/Widowed/No

Q-3) <Satisfaction with living space>

Are you satisfied with the space available in your current home?

Yes/If pressed to say, yes/If pressed to say, no/No/Neither

Q-4) <Economic satisfaction>

Do you feel well off financially at the moment?

Yes/If pressed to say, yes/If pressed to say, no/No/Neither

Q-5) <Religious affiliation>

Do you have any religious affiliation?

Yes/No/Prefer not to answer

<Perception of ED drugs, ED itself and sexual relations>

Q-6) <Knowledge of ED drugs>

Do you know about drugs for treating erectile dysfunction (ED) (e.g. Viagra®)?

Yes/A little/Not much/No

Q-7) <Interest in ED drugs>

Do you have an interest in drugs for treating ED (e.g. Viagra®)?

Yes/A little/Not much/No

Q-8) <Image of ED drugs>

Is your image of drugs for treating ED (e.g. Viagra®) favorable or unfavorable?

Favorable/If pressed to say, favorable/If pressed to say, unfavorable/Unfavorable/Neither

Q-9) <Image of men use ED drugs>

Is your image of men who use drugs for treating ED (e.g. Viagra®) favorable

or unfavorable?

Favorable/If pressed to say, favorable/If pressed to say,

unfavorable/Unfavorable/Neither

Q-10) <Image of men suffering from ED>

Is your image of men who are suffering from ED favorable or unfavorable?

Favorable/If pressed to say, favorable/If pressed to say,

unfavorable/Unfavorable/Neither

Q-11) <Importance of sexual relations>

Is sex (are sexual relations) an important part of your life?

Yes/If pressed to say, yes/If pressed to say, no/No/Neither/Prefer not to

comment

The following questions (No. 12 and 13) pertain to your current or future sexual partner.

Q-12) <Desire to use ED drugs if partner were to suffer from ED>

If your partner were to suffer from ED, would you want him to use drugs (e.g.

Viagra®) to treat the disorder?

Yes/Yes, probably/Not especially/No/Neither

Q-13) <Acceptance of ED drugs if partner were to suffer from ED>

If your partner were to suffer from ED, would you be amenable to his using
drugs (e.g. Viagra®) to treat this disorder?

Yes/Yes, probably/Not especially/No/Neither

Table 1: Overall questionnaire responses and participants' registered information

	(%)	(%)	(%)	(%)	(%)
Socio-cultural background					
1) Age-group (years old)	20-29	30-39	40-49	50-59	60 - 77
	n=232 (18.4)	n=253 (20.0)	n=249 (19.7)	n=272 (21.6)	n=256 (20.3)
2) Educational background	> High school	< or = High school			
	n=590 (46.8)	n=672 (53.2)			
3) Marital history	Yes#	No			
	n=965 (76.5)	n=297 (23.5)			
4) Satisfaction with living space	Yes	No	Neither		
	n=848 (67.2)	n=373 (29.6)	n=41 (3.2)		
5) Economic satisfaction	Yes	No	Neither		
	n=393 (31.1)	n=746 (59.1)	n=123 (9.7)		
6) Religious affiliation	Yes	No	No answer		
	n=278 (22.0)	n=942 (74.6)	n=42 (3.3)		
7) Size of town or city of	> or =500,000	<500,000			
	n=477 (37.8)	n=785 (62.2)			
8) Occupation	Yes	No	Other		
	n=637 (50.5)	n=582 (46.1)	n=43 (3.4)		
9) Experience of childcare	Yes	No	N.A.##		
	n=851 (67.4)	n=401 (31.8)	n=10 (0.8)		
Perception of ED drugs, ED itself and sexual relations					
10) Knowledge of ED drugs	Yes	No			
	n=1051 (83.3)	n=211 (16.7)			
11) Interest in ED drugs	Yes	No			
	n=151 (12.0)	n=1111 (88.0)			
12) Image of ED drugs	favorable	unfavorable	Neither		
	n=178 (14.1)	n=586 (46.4)	n=498 (39.5)		
13) Image of men using ED drugs	favorable	unfavorable	Neither		
	n=125 (9.9)	n=545 (43.2)	n=592 (46.9)		
14) Image of men suffering from	favorable	unfavorable	Neither		
	n=213 (16.9)	n=252 (20.0)	n=797 (63.2)		
15) Importance of sexual	Yes	No	Neither	No comment	
	n=536 (42.5)	n=370 (29.3)	n=257 (20.4)	n=99 (7.8)	
16) Desire to use ED drugs if partner were to suffer from ED	Yes	No	Neither		
	n=516 (40.9)	n=571 (45.2)	n=175 (13.9)		
17) Acceptance of ED drugs if partner were to suffer from ED	Yes	No	Neither		
	n=765 (60.6)	n=322 (25.5)	n=175 (13.9)		

#This answer included "divorced" and "widowed".

##N.A.: Not available

Table 2: Overlaps between image of ED drugs and its associated responses

Image of ED drugs	Knowledge of ED drugs (Yes) (n=1051)		Knowledge of ED drugs (No) (n=211)	
	Interest in ED drugs			
	Yes (n=142)	No (n=909)	Yes (n=9)	No (n=202)
Favorable (n=178)	64	105	1	8
Unfavorable (n=586)	49	437	3	97
Neither (n=498)	29	367	5	97

Image of men using ED drugs			
Image of ED drugs	Favorable (n=125)	Unfavorable (n=545)	Neither (n=592)
Favorable (n=178)	109	17	52
Unfavorable (n=586)	7	451	128
Neither (n=498)	9	77	412

Desire to use ED drugs if partner were to suffer from ED			
Image of ED drugs	Yes (n=516)	No (n=571)	Neither (n=175)
Favorable (n=178)	137	26	15
Unfavorable (n=586)	174	360	52
Neither (n=498)	205	185	108

Acceptance of ED drugs if partner were to suffer from ED			
Image of ED drugs	Yes (n=765)	No (n=322)	Neither (n=175)
Favorable (n=178)	161	13	4
Unfavorable (n=586)	289	235	62
Neither (n=498)	315	74	109

Table 3: Factors related women's negative attitudes to their partners using ED drugs

	Desire to use ED drugs if partner were to suffer from ED (No)		Acceptance of ED drugs if partner were to suffer from ED (No)	
	Odds ratio	p value	Odds ratio	p value
Age-group (20s, 30s, 40s, 50s, 60s or older)	1.48	<0.0001	1.50	<0.0001
Image of ED drugs (Unfavorable)	2.18	<0.0001	2.70	<0.0001
Image of men using ED drugs (Unfavorable)	1.91	0.0002	1.79	0.003
Image of men suffering from ED (Unfavorable)	1.77	0.003	2.21	<0.0001
Interest in ED drugs (No)	3.59	<0.0001	2.28	0.009
Importance of sexual relations (No)	2.90	<0.0001	1.76	0.0003