



## **Erectile dysfunction and health-related quality of life in elderly males**

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### **ABSTRACT**

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One important aspect that will determine the quality of human life is sex life. Therefore sexual activity may be used in the assessment of the quality of life. Erectile dysfunction (ED) is the inability to continuously achieve or maintain a penile erection quality so as to achieve a satisfying sexual relationship. The aim of this study was to determine the relationship between ED and quality of life in the male elderly. A cross-sectional study was carried out on males aged 60 years and over in West Cilandak village, South Jakarta. The presence of ED was evaluated by means of the International Index of Erectile Function (IIEF) and quality of life with the Short Form Health Survey (SF-36). One-way analysis of variance (ANOVA) was used to compare the mean difference of QOL by erectile dysfunction category. The correlation between the total ED score and QOL was analyzed using the Pearson correlation analysis. Subjects included 199 elderly male patients, with mean age of 66.7 years (age range 60-81 years), among whom 80.5% presented with ED. The results of ANOVA analysis showed that ED affects quality of life total score ( $p=0.000$ ), with a significant difference in the vitality ( $p=0.029$ ), physical function ( $p=0.048$ ), and role emotional subscales ( $p=0.011$ ). ED is a highly prevalent among elderly males and impairs the overall quality of life, The SF-36 is applicable and suitable for evaluation of quality of life.

**Keywords:** Erectile dysfunction, health-related quality of life, elderly males

### **INTRODUCTION**

Owing to advances in public health, human life expectancy continues to increase, with the result that people aged 65 years and older comprise the fastest growing segment of the global population. Increasing life expectancy

has changed the structure of the world population and the numbers of the aging population increase continuously.

In 2005, there were 673 million (10%) elderly people over 60 years old out of a world population of 6.6 billion.<sup>(1)</sup> Indonesia has experienced population aging since the last few

decades. The proportion of elderly males was 7.8% in 2010, and is predicted to reach 12.6% in 2025.<sup>(2)</sup> As people age, the incidences of a great number of chronic diseases dramatically increase, and as the population ages, expectations for their health-related quality of life (HRQoL) increase. HRQoL is a subdivision of quality of life (QOL), and most commonly refers to people's experience of their global health. It may also refer to health-related subjective well-being, functional status, or self-perceived health. A representative definition of HRQoL is "a multi-dimensional concept that encompasses the physical, emotional, and social components associated with an illness or treatment".<sup>(3)</sup> QOL measures may help construct a comprehensive health profile of older people after they experience an illness.<sup>(4)</sup> Age-related physiologic changes include the slower progression of the sexual response cycle. Medical illnesses and medications, as well as cultural, societal, and psychological factors, also impact on sexual function.

One important aspect that also determines QOL in humans is their sexual life. An enjoyable sexual life has a positive influence on QOL. Conversely, poor sexual life may impair QOL. Therefore sexual activity may be used to assess the QOL in elderly males.<sup>(5)</sup> In 1995, the number of Asian men with erectile dysfunction (ED) ranked first at 86.9 million, followed by approximately 30 million in Europe and an equal number in United States, while the estimated prevalence in the rest of North America, Africa, South America, and Oceania were estimated at 11.9, 11.5, 10.5 and 1.0 million, respectively.<sup>(6)</sup> ED may be a manifestation of a serious disorder, such as cardiovascular disease, diabetes, or depression, and commonly has a negative influence on QOL and interpersonal relationships.<sup>(7)</sup> With the increasing numbers of the elderly population, ED may possibly become a public health problem. According to the National Institute of Health Consensus Development Panel on Impotence ED is defined as 'the consistent

inability to sustain an erection sufficient for sexual performance".<sup>(8)</sup> The International Index of Erectile Function (IIEF-15), a screening instrument developed by Rosen et al. and validated in more than 63 languages, comprises 15 items, while an abridged version, the IIEF-5, contains just 5 items.<sup>(9,10)</sup> Some studies have demonstrated that ED deteriorates the HRQoL. HRQoL among men in the general population with ED is poorer in those with comorbid illnesses and improves with age.<sup>(11)</sup> In the general population there is commonly a reduction in HRQoL, with an impairment in physical functioning, but minimal changes in mental health.<sup>(12)</sup> A man's inability to achieve or maintain an erection is inevitably linked to troublesome feelings of disappointment, frustration, and loss of confidence, which may spill over into other areas of his life. The purpose of this cross-sectional study was to determine the relationship between ED and HRQoL in older men.

## METHODS

### Research design

An analytical cross-sectional study was conducted to determine the presence or absence of an association between ED and health-related QOL in elderly males attending a primary health center at the village (*kelurahan*) of West Cilandak, South Jakarta. The study was conducted from July to August 2011.

### Research subjects

Subjects of the study were men aged 60 years and older, residing in the village of West Cilandak; who did not suffer from severe disorders, such as stroke, coma, or cancer; were capable of good communication; and willing to participate in the study. The sample size required for this study was determined according to the formula for sample size of a cross-sectional study, with the prevalence of elderly males with poor QOL of 0.79, alpha level of 0.05 and acceptable margin of error for proportion being

estimated = 0.05, giving an optimal sample size of 137.<sup>(13)</sup> Selection of the subjects was by cluster and simple random sampling. In each RW (*rukun warga* or hamlet, a subunit of *kelurahan*), the number of subjects were selected by proportional sampling.

### Data collection

Personal interviews were conducted to obtain information on age, smoking habits, and comorbidities, namely hypertension and diabetes mellitus.

### Assessment of HR-QoL

HR-QoL (subsequently called QoL) was assessed by means of the Short Form Health Survey (SF-36) questionnaire, which is a reliable and valid instrument for assessment of QoL in older people. The SF-36 contains 36 questions that have been translated into Indonesian.<sup>(14)</sup> The SF-36 includes 8 subscales namely: physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH). It also provides two summary scales, physical component summary (PCS) and mental component summary (MCS). Scores range from 0 to 100 for each subscale with higher scores indicating a better condition.

### Assessment of erectile dysfunction

ED was assessed using the International Index of Erectile Function (IIEF) questionnaire, a multi-dimensional self-report instrument for the assessment of male sexual function, and recommended as a primary endpoint for ED. The questionnaire comprises 15 items that are divided into five domains of sexual function: erectile function (six items), orgasmic function (two items), sexual desire (two items), intercourse satisfaction (three items), and overall satisfaction (two items). A scoring key for each of the sexual function domains was developed and validated. The subscale scores range as follows: a) erectile function: 1-30; b)

orgasmic function: 0-10; c) sexual desire: 2-10; d) intercourse satisfaction: 0-15; and e) overall satisfaction: 2-10. The subjects' ED was measured and categorized according to severity using a five-level ordinal scale based on their IIEF score: i) severe dysfunction (score 0-6); ii) moderate dysfunction (score 7-12); iii) mild to moderate dysfunction (score 13-18); iv) mild dysfunction (score 19-24); and v) no dysfunction (score 25-30).<sup>(15)</sup>

### Data analysis

To describe the subjects' characteristics, observed frequencies were used for qualitative variables. One-way analysis of variance (ANOVA) was used to compare the mean difference of total QOL and the 8 domains of SF-36 by ED category. The correlation between the total score of ED and QOL was analyzed using the Pearson correlation test. All statistical calculations were performed by means of SPSS version 17.0. A p-value of 0.05 was considered statistically significant.

## RESULTS

A total of 137 elderly males participated in this study, with mean age of  $66.7 \pm 8.2$  years (age range: 60 - 81 years), of whom 23 men (16.8%) were smokers, 38.7% had a past history of hypertension, and 59 men (43.1%) had a past history of diabetes mellitus. Among these subjects, 36 men (26.3%) had severe ED, 26 men (19.0 %) had mild ED, while 13 men (9.5%) had no ED (had normal erection) (Table 1).

The results of one-way ANOVA showed that total QOL was significantly greater in elderly males with normal erectile function ( $p = 0.000$ ). Similar results were obtained for physical functioning ( $p=0.048$ ), vitality ( $p=0.029$ ) and role emotional ( $p=0.011$ ) subscales. Higher mean scores from these three domains were found in elderly males with normal erectile function, in comparison to elderly males with severe ED (Table 2).

Table 1. Distribution of several key features of the respondents (n=137)

Variable	n (%)
Age (years)	
60– 74	115 (83.9)
≥75	22 (16.1)
Smoking	
Yes	23 (16.8)
Ex-smoker	56 (40.9)
No	58 (42.3)
History of hypertension	
Yes	53 (38.7)
No	84 (61.3)
History of diabetes mellitus	
Yes	59 (43.1)
No	78 (56.9)
Erectile dysfunction	
Severe	36 (26.3)
Moderate	28 (21.2)
Mild to moderate	33 (24.1)
Mild	26 (19.0)
No	13 (9.5)

Pearson correlation analysis indicated a significant correlation between ED and QOL ( $r = 0.376$ ;  $p = 0.000$ ). Better ED in elderly males result in better QOL (Table 3).

## DISCUSSION

Our study demonstrated that 80.5% of elderly males had ED, among whom 26.3% had severe ED according to the IIEF instrument.

Comparable results were found in a cross-sectional Taiwanese study on ED in community-dwelling males aged 65 years and older, using the IIEF-5, the abridged version of IIEF.<sup>(16)</sup> The ED prevalence was 57.6% among the 125 males completing the study, of whom 39.6% were mild cases of ED; 20.8% were moderate to mild; 9.4% were moderate; and 30.2% were severe ED. Voluntary health examinations of men between 20 and 80 years revealed that 32% had some degree of ED when screened using IIEF-5. ED was present in 37.5% (51–60 years), and increased to 71.2% in between 71 and 80 years.<sup>(17)</sup>

In contrast, the study conducted by Nicolosi et al.<sup>(18)</sup> found an overall ED prevalence of 11% among Indonesian men. The subjects in Nicolosi's study were men and women aged 40-80 years, and the instrument used to assess ED differed from the instrument used in our study. The presence of sexual dysfunction was assessed using two sequential questions; the first was "During the last 12 months have you experienced any of the following for a period of 2 months or more?": 'Lacked interest in having sex', 'Was unable to reach climax (experience orgasm)'; 'Reached climax (experienced orgasm) too quickly'; 'Experienced physical pain during intercourse'; 'Did not find sex pleasurable'; (men only) 'Had trouble achieving or maintaining an erection'; (women only) 'Had trouble becoming adequately lubricated'. Those who answered positively to the first question

Table 2. Mean total and 8 subscales of QOL by erectile dysfunction category

QOL dimension	Erectile dysfunction					P
	Severe	Moderate	Mild to moderate	Mild	Normal	
Total SF-36	49.9±11.9	56.2±11.9	53.3±12.7	63.2±12.2	65.5±10.1	0.000
SF 36 Physical functioning	50.2±28.1	64.3±27.5	63.9±26.1	65.9±30.9	73.1±24.7	0.048
SF 36 Role physical	43.8±43.7	50.0±43.8	42.4±35.1	65.4±37.5	71.2±39.3	0.061
SF 36 Bodily pain	46.8±24.0	50.4±24.9	47.7±26.5	53.4±25.1	47.3±25.3	0.864
SF 36 General health	52.4±15.9	54.2±14.0	51.7±15.0	59.6±16.5	65.6±17.7	0.115
SF 36 Vitality	51.1±14.2	46.4±13.3	48.8±18.2	56.1±19.2	58.3±14.4	0.029
SF 36 Social functioning	57.2±24.7	57.2±26.2	61.8±30.1	62.3±19.5	67.6±29.1	0.672
SF 36 Role emotional	42.6±39.5	53.5±36.8	60.3±38.4	83.4±30.5	86.3±19.2	0.011
SF 36 Mental health	55.3±16.0	56.7±16.3	57.0±17.4	56.6±21.8	67.3±15.4	0.066

\* One-way ANOVA

Table 3. Correlation between erectile dysfunction and quality of life in elderly males (n=137)

	Quality of life	p
Erectile dysfunction	r = 0.376*	0.000

\* Pearson correlation coefficient

were asked a second question: "For each of these experiences, how often would you say this has occurred during the last 12 months?" and the offered answers were 'Occasionally', 'Sometimes' and 'Frequently'.

The prevalence of ED in men between 60 and 69 years of age in Japan, Singapore and China are 70%, 77% and 65%, respectively.<sup>(19-21)</sup> These differing prevalence rates may have been caused by the fact that ED is subject to numerous influences. Age has been shown to be one of the most, if not the most, powerful and consistent predictor of ED. Given the differences in the age distribution of the study populations in different studies, and hence the differences in age-related ED, it is almost impossible to compare the prevalence rates of ED between different studies.<sup>(22)</sup>

Our study results demonstrate a significant association between ED and QOL. Male subjects without ED had a higher QOL score than the group of subjects with ED. We observed that average values of the physical functioning, vitality, and role emotional domains decreased when subjects had moderate or severe ED. In addition, several studies showed that clinically and statistically significant improvements in some QOL domains (mental and social health, and self-esteem) have been documented after ED treatment, but that other general parameters (physical and cognitive functioning, and global health perceptions) are unaffected.<sup>(23)</sup> These results demonstrate that general QOL parameters (mental health, depression, and psychological well-being) are profoundly affected by ED. However, the physical capacity and environmental domains did not reveal an

impact due to ED; the reasons for this are unclear. Further study is needed to explore the possible cause.

Our study found the role emotional subscale of the SF-36, a multipurpose short-form health survey with 36 questions, to be more profoundly associated with ED than the physical domains. Similar results were found in a study on men aged 18 years or older in metropolitan Philadelphia who were treated for chronic ED among hemodialysis patients for at least six months.<sup>(25)</sup> Sexuality is an important component of emotional and physical intimacy that men experience through their lives. Cardiovascular risk factors and vascular disease result in endothelial dysfunction and early development of erectile failure. Smoking, obesity, hypertension, diabetes and dyslipidemias contribute to ED in elderly males.<sup>(26-28)</sup> Several instruments have been developed to be self-administered in the context of QOL and ED assessment.<sup>(29,30)</sup> The use of validated instruments in clinical work has been suggested in order to improve the diagnostic rate of ED and create an increased opportunity for therapy, but just asking one general question as opposed to none is the first need in clinical practice.

Two potential limitations of our study must be discussed. First, the presence of ED was based on subjects' self-report, without any attempt to clinically confirm the diagnosis. Second, the cross-sectional design of our study does not allow us to draw conclusions about the causal link between ED and QOL. These aspects must be further investigated using a cohort longitudinal study.

## CONCLUSIONS

ED is a highly prevalent disease among elderly males, with the decline in ED that possibly affecting the QOL in elderly males. The QOL of many elderly males, especially in the physical functioning, vitality, and role emotional subscales, are already impaired by the presence of ED. The SF-36 can be used for

clinical research and evaluating treatment outcomes for ED. Longitudinal population surveys should be done to improve the understanding of sexuality in the older old.

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