Research Article

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The Impact of Erectile Dysfunction on Husband's and Wife's Quality of life: A Study on Malaysia

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Abstract

It has been hypothesized that the quality of life for men who suffer from ED is lower than that of men who do not suffer from ED. Men with ED also have a negative effect on their female partners' quality of life, who may have problems in their relationships and a decline in their level of happiness in their partnership. This research investigates these two hypotheses in the context of Malaysia. We employed Ferrans and Power's Quality Of Life Index to assess the life qualities of the husband and wife among the study participants. The International Index of Erectile Function (IIEF) is used to determine the level of erectile dysfunction. The data estimation suggested that erectile dysfunction has significant negative impacts on the life quality index of both husband and wife. Even though ED is not a deadly illness, the findings of this research show that improved management and availability of effective ED treatments are needed to assist reduce the intimacy cost of this condition. These results also highlight the need for increased knowledge about ED, a better grasp of the various treatment choices, and a greater comprehension of the physical and mental cost that ED may put on men and their relationships.

Keywords: *Couples, Erectile dysfunction Malaysia, Quality of life*

Declarations

Competing interests:
The author declares no competing interests.

i. Introduction

Intimate bonds are fundamental to the human condition. Humans are social animals by nature, and with the exception of a tiny group of hermits, we require each other's companionship. Almost everyone will feel alienated, lonely, worried, and sad if we are unable to have personal interactions. Most individuals would not perceive their lives to be full unless they had close connections. The great majority of such couples place a high value on sexuality and sexual activities.

During the duration of a relationship, the intensity of sexual emotions and behavior normally changes. Sex is quite common early in a relationship, regardless of whether the participants are young or elderly.

Physical intimacy is vital in building emotional closeness, which will help the partnership last over time (Bergeron *et al.*, 2021). Throughout the life of the partnership, which may last 60 years or more, sex will turn more or less significant and more or less regular at various points (Forte, Wells, and Cotter, 2008) (Flores *et al.*, 2022). It is, however, as crucial to senior couples as it is to younger couples as a way of providing the intimacy and deep connection that will keep their relationship going (Kaplan, 1990).

Erectile dysfunction (ED) is the inability to produce and maintain an erection appropriate for sexual intercourse (Rew and Heidelbaugh, 2016). The most visible element of the man's body's reaction to sexual arousal is an erection. It is a complicated neurovascular response that is regulated by cognitive input and aided by testosterone. We cannot reach 'wellness' unless we can express ourselves sexually and develop and sustain personal relationships (Riley, 2002). ED is plainly a health concern since it commonly interferes with the capacity to build personal connections, and is a sign of serious health issues.

Men are worried about their sexual function and well-being. A small percentage of males with sexual issues seek professional help. This is due to shame, the perception that the ED is just transitory or unimportant, and the fear that the clinician will not be engaged with their Erectile dysfunction issue(O'Donnell *et al.*, 2005). The increasing public understanding and tolerance of sexual issues that have resulted from the discovery of ED medications are helping to improve the situation (Cohan and Korenman, 2001).

An increasing amount of evidence indicates that ED has a negative impact on a partner's own sexual pleasure and sexual function, which has a negative impact on the relationship (Yafi *et al.*, 2016). ED may have a significant negative impact

on psychological well-being. It is related to sadness and causes a decline in self and sexual confidence (Latini *et al.*, 2002). Many psychiatric problems may co-occur with erectile dysfunction, and it can be difficult to determine if the condition is caused by erectile dysfunction or vice versa. Depressive symptoms are frequent in males with ED and have been reported to be severe enough to fulfill the symptoms of major depression in certain cases (MDD) (Seidman and Roose, 2000; Stefanatou *et al.*, 2016). Secondary sadness and lack of self-confidence are common in males with ED, and ED may be a sign of a fundamental depressive disease (Nobre, 2010).

There are clearly documented possible causes for erectile dysfunction, but the connection and interplay between risk variables, as well as the clustering of risk factors, must be validated by more thorough investigations. A variety of variables may contribute to ED, including Vascular diseases, such as atherosclerosis, which may cause blood flow to the penis to become obstructed or constricted (Billups *et al.*, 2005; Vlachopoulos *et al.*, 2008). Nerves that provide impulses to the penis may be destroyed as a result of a stroke, diabetes, or other factors. Psychological states include stress, sadness, a lack of brain stimulation, and performance anxiety (Dean and Lue, 2005). The risk factors for erectile dysfunction are also cigarettes or other tobacco usages. Modification of some factors, such as alcohol use or smoking habits, at a mature time in life may well not lead to a change in sexual dysfunction but may result in an improvement in the individual's erectile status if handled at an earlier age. Diabetes mellitus, in particular, is a well-known risk factor for erectile dysfunction (Malavige and Levy, 2009).

ii. ED in Malaysia

From the studies that have been done in Malaysia, ED seems to be quite common. In a recent study, (Bin Nordin *et al.*, 2019) found that the occurrence of self-reported ED reached 81.5 percent overall. The degree of ED was as follows: mild (17.0 percent), mild to moderate (23.8 percent), moderate (11.3 percent), and severe (11.3 percent) (29.5 percent). Multivariate analysis revealed that ED was correlated with growing age (odds ratio [OR] 4.023, 95 percent confidence interval [CI] 1.633–9.913), Indian versus Malay ethnicity (OR 3.252, 95 percent CI 1.280–8.262), secondary versus tertiary education (OR 2.171, 95 percent CI 1.203–3.919), single versus married status (OR 6.119, 95 percent CI 2.542–14.734). The study also reported that In Malaysia, a study on ED in 1998 revealed that more than 16% of males aged 40 and above had mild to severe ED. If the incidence statistics of ED in Malaysia were to comprise individuals with moderate ED, over 60% of Malaysian males aged 40 and over would be diagnosed with ED (Bin Nordin *et al.*, 2019).

(Khoo, Tan, and Low, 2008) studied the prevalence of ED in Malaysia. They found that the total prevalence ratio of ED was 70.1 percent (N = 246), with 32.8 percent having mild ED, 17.7 percent having light to moderate ED, 5.1 percent having moderate ED, and 14.5 percent having severe ED. There were 23.9 percent of males who did not have ED and 6 percent (N = 21) of men who did not engage in sexual activity. Males with ED had a mean age of 58.55 years (SD = 6.88 years), whereas men without ED had a mean age of 54.43 years. There was a significant relationship between age categories and erectile function level. The connection between age and ED was significant. The ED score decreased with age, indicating more severe ED. There was no significant connection between race and ED. There was also no statistically significant relationship between ED and academic level. There was a significant relationship between ED and self-rated current health status (94.1 percent of males with no ED, 78.3 percent of mild ED, 72.6 percent of mild to moderate ED, 61.1 percent of moderate ED, 66.7 percent of severe ED, self-rated excellent health. A significant relationship was also discovered between ED and profession. When compared to other occupational groups, engineers and professionals, manufacturing and related employees, workers, and pensioners had a greater frequency of mild and severe ED.

(Ab Rahman, Al-Sadat and Yun Low, 2011) investigated the prevalence and related variables of ED among males who visited government primary care centers in a Malaysian metropolitan region. This cross-sectional research included 1331 males aged 40 to 76 years. A self-administered questionnaire was used to collect information on demographics, medical history, and lifestyle variables. (IIEF-5) was used to evaluate ED. The age range of the participants was 40–79 years, with an average of 54.7 (8.3) years. ED was found in 69.5 percent of individuals. In regards to severity, 33.1% had mild ED, 26.6 % had moderate ED, and 9.8 % had severe ED. Participants with a greater age allegedly had a higher incidence of ED. The rate of ED rose in men in their 50s, 60s, and 70s, respectively. The frequency of moderate to severe ED rose with age as well. Severe ED was seen in just 2.1 percent of males in their 40s and increased to 22.4 percent of men over 60. Diabetes or heart disease had the greatest prevalence of ED (89.2 percent), preceded by hypertensives (80.4 percent) and hypercholesterolemia (80.4 percent) (78.9 percent). Men in the 50s and 60s had an increased likelihood of being admitted to the ED.

In another study, (Nicolosi *et al.*, 2003) looked at how common erectile dysfunction (ED) was in community-based inhabitants in Brazil, Italy, Japan, and Malaysia. He did this to study how ED was related to demographics, health conditions, and health-related behaviors. A standardized questionnaire was used to interview a random sample of 600 males aged 40 to 70 years old in each nation. The data were all self-reported. In Japan, the age-adjusted incidence of moderate

or full ED was 34%, in Malaysia it was 22%, in Italy it was 17%, and in Brazil, it was 15%. The total age-specific frequency of moderate or full ED was 9% for males aged 40 through 44 years, 12% for those 45 through 49 years, 18% for those 50 to 54 years, 29 percent for those 55 to 59 years, 38% for those 60 through 64 years, as well as 54% for those 60 - 70 years. Diabetes, heart illness, lower urinary tract problems, frequent smoking, and depression were all linked to an elevated risk of ED, which rose by 10% every year of age. It was inversely related to literacy, physical exercise, and alcohol consumption.

(Koh, 2013) determined the frequency of erectile dysfunction (ED) in males with ischemic heart disease. To investigate the frequency and intensity of ED, we appointed 510 men with a documented ischemic heart condition and interviewed them employing (IIEF-5) questionnaire. The prevalence of ED was evaluated as a score of less than 22 on the IIEF-5. 461 males (90.4 percent) reported some level of ED, with two-thirds having moderate to acute ED. With age, the incidence of ED rose considerably. The only substantial risk factor was being beyond the age of 60. Diabetes, hypertension, diuretics, and oral hypoglycemic medications were non-statistically significant yet major risk factors. In males with ischemic heart disease, ED is fairly prevalent. The incidence and severity rose dramatically beyond the age of 60.

(Teoh *et al.*, 2017) determined the prevalence of ED within this group of patients, as well as its risk factors and connection with quality of life (QOL). The research comprised male MMT patients at a Malaysian tertiary hospital. 134 individuals with partners were evaluated for ED. ED was found in 67% of MMT patients, with 26.1 percent having mild ED, 30.4 percent reporting mild-to-moderate ED, 7.0 percent having major ED, and 17.2 percent having severe ED. Those with depression were four times more likely to develop ED than patients without depression, and age was substantially associated with the severity of ED. Having ED indicated a lower QOL in the area of social relationships. Depression is strongly linked to ED, which has a poor impact on the social part of QOL in methadone maintenance treatment patients.

(Nahas and Sulaiman, 2017) studied if lower BMD is linked with ED in depressed males and emphasized the potential shared underlying causes that may cause these two illnesses in this particular group of patients. A total of 119 depressed males were recruited for the cross-sectional research in Malaysia. Their demographic factors and clinical information were collected. The 5-item IIEF was used to assess erectile function. Calcaneal BMD scanning was performed on all patients. The Chi-square test was used to examine if there is a significant relationship between ED and lower BMD. Ninety individuals in the research had ED, whereas 29 participants reported no ED. There was a substantially larger

percentage of patients with poor BMD in the ED group than in the non-ED group. The research found that low BMD was strongly related to ED in depressed males and that BMD was considerably lower in ED sufferers relative to non-patients only in young depressive patients. More investigation into these results and the potential underlying processes for such a connection is needed.

iii. Methodology

IIEF-5

From 1996–1997, the International Index of Erectile Function (IIEF) was created and validated as a supplement to the sildenafil clinical trial program (Kim *et al.*, 2016; El-Wakeel *et al.*, 2020). The IIEF was created to fulfill the demands of regulatory bodies all around the globe, and it was meant to be available in different languages and cultures. Ever since, it has become the "global standard" treatment assessment instrument for clinical studies in the ED, independent of the kind of therapeutic intervention or research population.

Quality of life index

To measure the Life quality for husband and wife, we used “Ferrans and Powers QUALITY OF LIFE INDEX” (Hagell and Westergren, 2006; Kimura and Silva, 2009). The index has 35 items with 6 levels starting from Very Dissatisfied =1 Moderately Dissatisfied =2, Slightly Dissatisfied = 3 Slightly Satisfied = 4 Moderately Satisfied=5, and to Very Satisfied = 6. This research uses the primary data of the surveys taken from 280 Malaysian couples.

Research Hypotheses

This research tested the following hypotheses:

H1: ED impacts the life quality index of the husband

H2: ED impacts the life quality index of the wife

Estimation technique

Ordinary estimators for the linear regression under discussion are sensitive to the presence of outlier data. Because traditional regression approaches are very sensitive to outlier data, they may produce coefficient estimates that do not accurately represent the underlying statistical relationship (Levy and Nikoukhah, 2004; Yang, Tan and He, 2014).

Robust least squares refer to a class of regression procedures that are said to be less responsive to outliers. M-estimation, S-estimation, and MM-estimation are the three methods for calculating resilient least squares. The focus of the three techniques differs (Tran, Al-Jumaily and Islam, 2019; Shakyawar *et al.*, 2021):

M-estimation is used to cope with outliers in the dependent variable, which are values that differ considerably from the linear regression standard (large residuals) (Susanti, Pratiwi and Sulistijowati, 2014). If we assume linearity, homoscedasticity, and uncorrelated errors, the maximum likelihood estimator is just the OLS estimator produced by minimizing the sum of squares function (Wiens, 2000) as given below. S-estimation is a time-intensive computational technique that emphasizes outliers in the regressor factors (high leverages). It has been suggested that the amplitude of the residuals be examined in response to the low breakdown point of M-estimators. In this line, S-estimates were provided. S-estimates are the feature that provides the least amount of residual dispersion.

$$\min \sum_{i=1}^{n} \left(y_i - \sum x_{ij} \beta_j \right)^2 = \min \sum_{i=1}^{n} (e_i)^2.$$

$$\min \hat{\sigma}\left(e_1(\hat{\beta}), \ldots e_n(\hat{\beta})\right).$$

iv. Results

Table 1. Descriptive statistics

	ED	HQL	WQL
Mean	15.26316	102.7434	117.3195
Median	15.00000	101.0713	114.9514
Maximum	24.00000	192.3203	198.2519
Minimum	7.000000	18.89037	40.34272
Std. Dev.	5.265241	52.72264	47.38981
Skewness	0.040551	0.041129	0.040161
Kurtosis	1.776630	1.775603	1.773874
Jarque-Bera	17.85064	17.88274	17.92932
Probability	0.000133	0.000131	0.000128
Sum	4350.000	29281.86	33436.06
Sum Sq. Dev.	7873.263	789428.3	637805.6
Observations	285	285	285

Table 2. The negative impact of ED on a husband's life quality

Dependent Variable: **HQL**
Method: Robust Least Squares
Sample: 1 285
Included observations: 285
Method: M-estimation
M settings: weight=Bisquare, tuning=4.685, scale=MAD (median centered)
Huber Type I Standard Errors & Covariance

Variable	Coefficient	Std. Error	z-Statistic	Prob.
ED	-10.01172	0.009955	-1005.711	0.0000
C	-50.06338	0.160699	-311.5345	0.0000

Robust Statistics

R-squared	0.869624	Adjusted R-squared	0.869163
Rw-squared	0.999783	Adjust Rw-squared	0.999783
Akaike info criterion	262.5445	Schwarz criterion	270.5396
Deviance	181.0450	Scale	0.835693
Rn-squared statistic	1011454.	Prob(Rn-squared stat.)	0.000000

Non-robust Statistics

Mean dependent var	102.7434	S.D. dependent var	52.72264
S.E. of regression	0.858347	Sum squared resid	208.5030

Table 2. The negative impact of ED on a wife's life quality

Dependent Variable: **WQL**
Method: Robust Least Squares
Sample: 1 285
Included observations: 285
Method: M-estimation
M settings: weight=Bisquare, tuning=4.685, scale=MAD (median centered)
Huber Type I Standard Errors & Covariance

Variable	Coefficient	Std. Error	z-Statistic	Prob.
ED	-8.994547	0.011315	-794.9497	0.0000
C	-19.98470	0.182649	-109.4157	0.0000

Robust Statistics

R-squared	0.848918	Adjusted R-squared	0.848384
Rw-squared	0.999668	Adjust Rw-squared	0.999668
Akaike info criterion	305.0929	Schwarz criterion	312.7611
Deviance	233.5007	Scale	0.880100
Rn-squared statistic	631945.0	Prob(Rn-squared stat.)	0.000000

Non-robust Statistics

Mean dependent var	117.3195	S.D. dependent var	47.38981
S.E. of regression	0.998434	Sum squared resid	282.1145

Table 2 shows the regression results. It shows that erectile dysfunction has a significant impact on the life quality of a husband. The coefficient signs of the erectile dysfunction are negative, indicating that erectile dysfunction has a negative impact on the husband's quality of life. The t-statistics and the associated p-values suggest that the null hypotheses of no impact have been rejected at a 5% level of significance. The R-square, 0.85, and the adjusted Weighted R-square has also high values indicating that the model is well-fit.

Similarly, the effect of erectile dysfunction on a wife's quality of life was described in table 3. It indicates that erectile dysfunction has also a major influence on the life quality of the wife. The coefficient indications of the erectile dysfunction are unfavorable, showing that erectile dysfunction has a negative influence on the

wife's quality of life. The t-statistics and the related p-values show that the null hypothesis of no influence has been rejected at a 5 percent level of significance. The R-square and the modified Weighted R-square has likewise high value suggesting that the model is well-fit.

Figure 1. Confidence ellipse of Husbad-QL equation

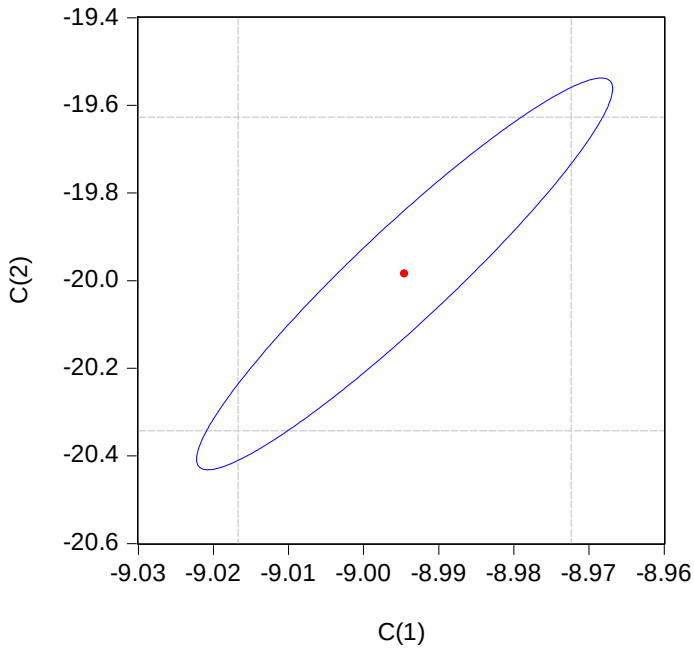


Figure 2. Confidence ellipse of Wife-QL equation

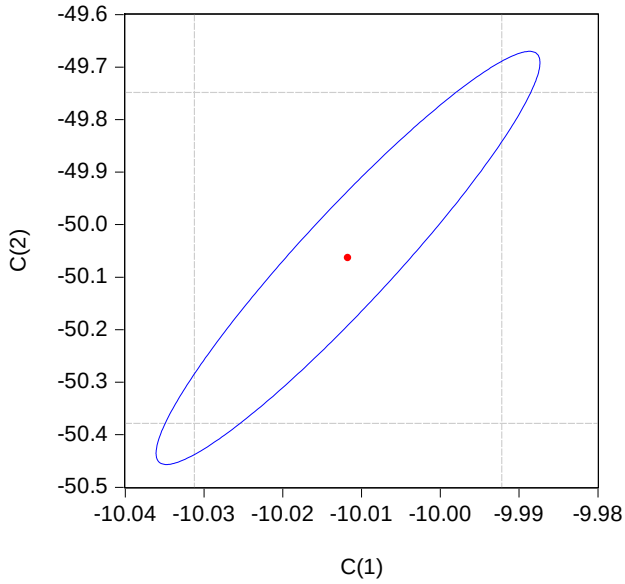


Figure 3 CUSUM lines show the stability of the ED model

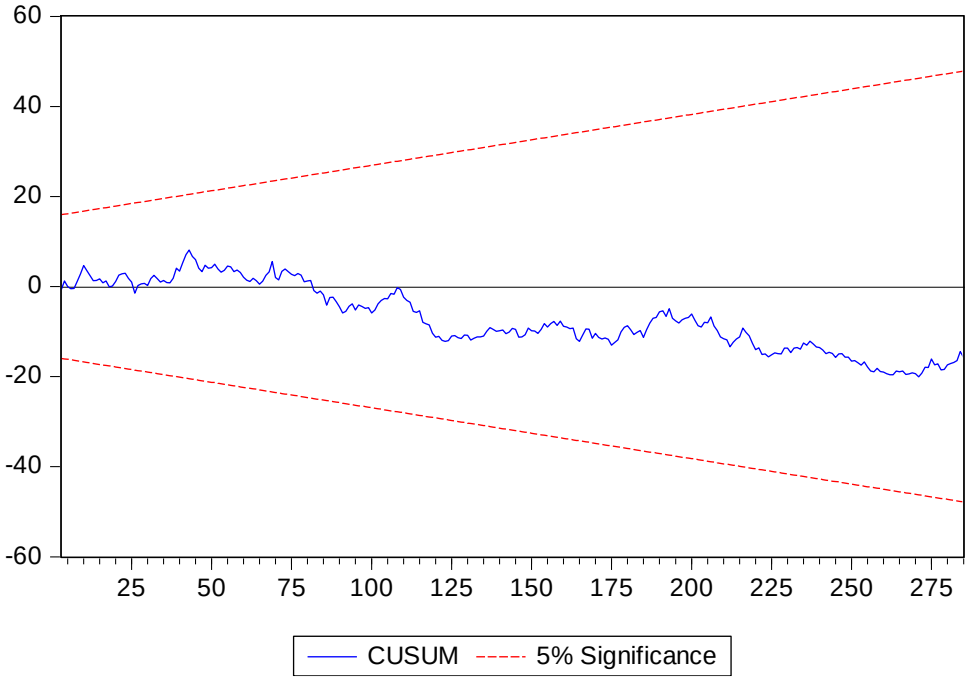
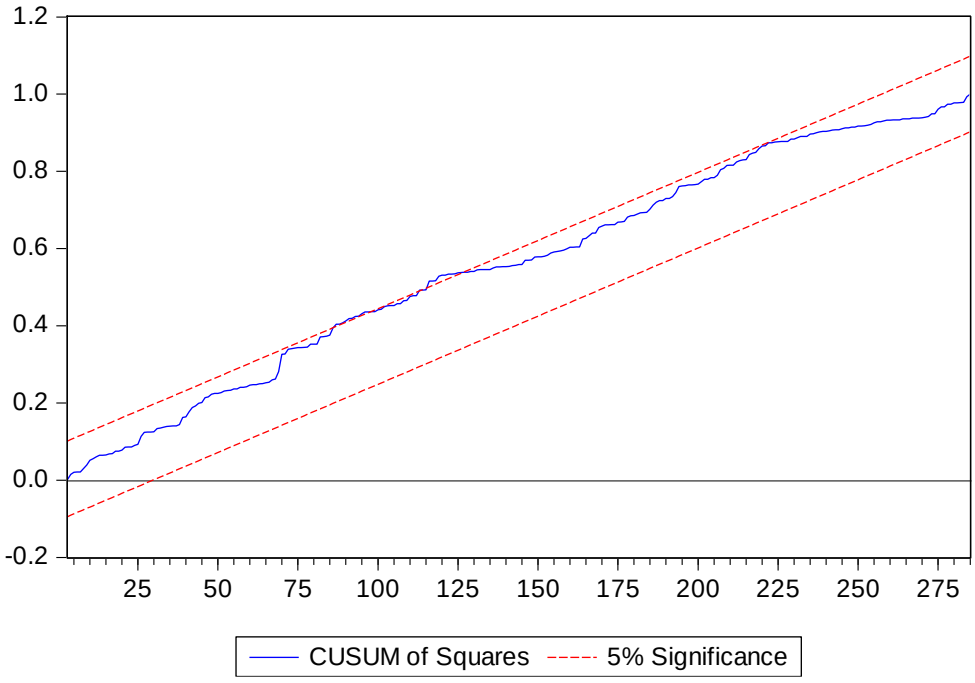


Figure 4 CUSUM square lines show the stability of the ED model



The two figures exhibit the stability assessments for the ED function in the case of both husband and wife's life quality. CUSUM and CUSUM of squares tests completed the stability tests. The blue CUSUM line and CUSUM of squares line did not significantly pass the 5 percent significance threshold in both cases, indicating the stability of parameters in the research models.

v. Conclusion

Sexual health is an important aspect of life. Other factors of health may and do influence it. This encompasses physical, psychological, spiritual, and social well-being.

Erectile dysfunction may impose pressure on a partnership. Often, men will escape sexual activities owing to the emotional agony associated with ED, leaving

their partner feeling rejected or insufficient. Some couples consider getting therapy for ED jointly, whilst other men wish to obtain treatment in secret. The greatest obstacle to obtaining treatment is a lack of communication, which may prolong the pain. The decline of erectile function may have serious consequences for men and women.

Many men may not seek medical help for sexual health issues due to feelings of embarrassment, delaying the detection and cure of more severe underlying diseases. Erectile Dysfunction is often caused by an underlying medical issue, such as cardiovascular disease, diabetes, liver illness, or others. Since ED may be a sign of worsening cardiac disease, physicians should be explicit when inquiring about their patients' health. By questioning patients more explicitly about their erectile function through discussion or a checklist during a visit, physicians may be able to spot more severe health concerns.

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