



Sexual functioning and quality of life of male patients on hemodialysis

F. Martín-Díaz, A. Reig-Ferrer* and R. Ferrer-Cascales*

Nephrology Department. Perpetuo Socorro Clinic. Alicante. *Department of Health Psychology. University of Alicante.

SUMMARY

Background: The sexual dysfunction is a highly prevalent problem among uremic men that limits their quality of life. The aim of this study was to determine the sexual function in chronic renal failure in males patients on hemodialysis and to find the nature of the problem. Also, we explored the impact of sexual dysfunction on health-related quality of life.

Methods: 103 male patients older than 18 years and receiving HD treatment were studied. The sexual function was evaluated with the International Index of Erectile Function, and the health-related quality of life was quantified with the COOP-WONCA Charts, both in their Spanish versions.

Results: 47% of the patients didn't have any kind of sexual activity. These ones presented a more advanced age ($p < 0,001$), a longer stay on dialysis ($p < 0,001$), a greater comorbidity index ($p < 0,05$) and smaller levels of seric albumin ($p < 0,05$). The sexually active patients presented a better physical fitness ($p < 0,001$) and overall health ($p < 0,05$), and a smaller difficulty to carry out the daily activities ($p < 0,05$) and pain ($p < 0,05$). A 40% of the patients with some kind of sexual function had a good erectile function, the 34,5% suffered a slight erectile dysfunction, the 16,4% a moderate one and the 9,1% a severe one. Multiple linear regression analysis demonstrated that the main determinant of the sexual activity was the age, followed by the physical fitness and the time on HD (32,7% of the variance explained). We found statistically significant correlation between the total score of IIEF and feelings ($r = -0,34$; $p < 0,05$), daily activities ($r = -0,27$; $p < 0,05$), social activities ($r = -0,30$; $p < 0,05$), social support ($r = -0,45$; $p < 0,01$) and quality of life ($r = -0,29$; $p < 0,05$). The patients without sexual activity didn't perceive their deficiency as a problem and considered this situation inherent to the ageing process.

Conclusions: The sexual dysfunction is a highly prevalent problem in the uremic male, but it doesn't have to be necessarily associated to a serious deterioration of the HRQOL. In this way, the presence or not of sexual activity doesn't present significant effect on the things that one has or wants to do. With everything, the patient without sexual activity frequently has advanced age, refers worse state of health and presents more problems of physical functioning and at the moment of taking to daily activities.

Key words: **Sexual function. COOP-WONCA Charts. Chronic renal failure. Health-related quality of life. Hemodialysis. International Index of Erectile Function.**

FUNCIÓN SEXUAL Y CALIDAD DE VIDA EN PACIENTES VARONES DE HEMODIÁLISIS

RESUMEN

Introducción: La disfunción sexual es un síntoma altamente prevalente en los pacientes con insuficiencia renal crónica. En el presente estudio nos proponemos determinar la función sexual en los pacientes varones de nuestro programa de hemodiálisis (HD), identificar la naturaleza del problema en caso de disfunción y analizar su repercusión sobre la calidad de vida relacionada con la salud (CVRS).

Métodos: Para ello se estudiaron 103 varones en programa de HD crónica en nuestro Centro. La función sexual y la CVRS se determinaron mediante la cumplimentación del test internacional de función eréctil (IIEF) y las láminas COOP/WONCA respectivamente.

Resultados: El 47% de los pacientes carecía de actividad sexual. Estos tenían una edad más avanzada ($p < 0,001$), llevaban más tiempo en diálisis ($p < 0,01$), tenían mayor índice de comorbilidad ($p < 0,05$) y menores niveles séricos de albúmina ($p < 0,05$) que los sexualmente activos. Los pacientes activos sexualmente tenían mejor forma física ($p < 0,001$), estado de salud ($p < 0,05$) y presentaron menor dificultad para realizar las actividades cotidianas ($p < 0,05$) y dolor ($p < 0,05$) que los sexualmente inactivos. De acuerdo a la puntuación en función eréctil sólo el 40% carecía de problemas de impotencia, el 34,5% padecía una disfunción eréctil leve, el 16,4% moderada y el 9,1% severa. Los principales determinantes para la existencia de actividad sexual fueron la edad, la forma física y el tiempo de permanencia en HD, explicando entre los tres el 32,7% de la varianza. Existe una correlación estadísticamente significativa de la puntuación global del IIEF con las láminas sentimientos ($r = -0,34$; $p < 0,05$), actividades cotidianas ($r = -0,27$; $p < 0,05$), actividades sociales ($r = -0,30$; $p < 0,05$), apoyo social ($r = -0,45$; $p < 0,01$) y calidad de vida ($r = -0,29$; $p < 0,05$). Los pacientes sin actividad sexual no percibieron esta carencia como un problema, asimilándola dentro del proceso natural de envejecimiento.

Conclusiones: Aunque la disfunción sexual es un problema altamente prevalente entre los varones en HD, no se asocia necesariamente con un deterioro severo en la CVRS. De hecho, la presencia o no de actividad sexual no presenta efecto significativo sobre las cosas que uno tiene o desea hacer. Con todo, el paciente sin actividad sexual suele ser mayor, refiere peor estado de salud y presenta más problemas de funcionamiento físico y a la hora de llevar a cabo las diversas actividades de la vida cotidiana.

Palabras clave: **Función sexual. Láminas COOP-WONCA. Insuficiencia renal crónica. Calidad de vida relacionada con la salud. Hemodiálisis. Test internacional de función eréctil.**

INTRODUCTION

Advanced chronic renal failure (CRF) has an impact on physical and psychological functioning of people suffering it.¹ When some years ago the possibility of artificially replacing renal function by means of a machine, the problem was focused on how to facilitate this type of therapy to all persons in need for it (because of a lack of technical resources) and on how to avoid the complications derived from it. Once this is-

sues were at least in part resolved, an interest emerges on other issues such as psychological adaptation to renal replacement therapy or quality of life from it. One of the issues that has remained the least known and studied, especially in our country, has been the impact that CRF and chronic application of renal replacement therapy has on sexual functioning. The little attention that the nephrologist pay to that issue may have contributed to this, at least in part motivated by some reluctance to talk to the patient about

some issues considered private and personal such as sexuality, and by the lack of a really effective treatment in many cases.

Since the 1970s, when the first works on sexual functioning in uremic patients were published^{2,3}, several studies have highlighted the high prevalence of sexual dysfunction among patients of both sexes with CRF²⁻⁸, which is primarily manifested as impotence and libido decrease in male patients, and a decrease of sexual desire and lubrication defects in female patients. The origin is not well understood yet, although it may be attributed to the interaction of a series of factors^{3,6,9-11}: uremic state, regressive issues conditioned by the chronic illness, inadequate psychological response to dialysis, decreased well-being, hormonal impairments, associated pathology (diabetes, vascular disease, uremic neuropathy, depression), medications, etc. These changes are evident in the uremic phase and get worse once dialysis has started, in spite of the improvement of other aspects such as physical functioning^{2-8,12}.

To date, there are very few works that have analyzed the influence that sexual functioning may have on (health-related quality of life) HRQOL in these patients, and generally they have just analyzed one particular aspect of it, erectile function¹³. However, there are no data analyzing sexual functioning more globally.

The aim of the present study was to determine sexual activity and functioning in male patients receiving HD therapy in our hospital and to analyze the impact of such problems on HRQOL.

MATERIAL AND METHODS

All male patients receiving renal replacement therapy with hemodialysis at our hospital were included in the study (104 male patients older than 18 years). The only exclusion criterion was the presence of severe impairments that would render difficult the understanding of the questions being asked. One 26 years old patient with mental retardation and language impairment was excluded. Before starting data collection, each patient was verbally informed on the nature of the study and its objectives, inviting him to participate. No patient refused to participate.

Demographical and medical data

These data were gathered from the patient's clinical chart and they included: age, etiology of renal failure, time on HD, comorbidities, laboratory parameters (hemoglobin, hematocrit, total proteins, albumin, pa-

rathormone, and appropriateness of dialysis index according to second generation Dauguidas' formula), as well as medications that may potentially interfere with erectile function¹⁴.

In order to determine comorbidities, a index was elaborated based on the model proposed by Evans *et al.*¹⁵, to which several domains were added due to their relevance and importance in the patient receiving replacement therapy with HD, such as the existence of previous malignancy, diabetes mellitus, and arterial hypertension. The comorbidity index is calculated by the sum of pathological categories present in each patient.

Sexual Functioning

It was determined by means of the Spanish version of the «*International Erectile Function Test*» (IEFT)¹⁶. This is a brief, simple, and valid instrument to determine issues related to the male patient sexual functioning¹⁶. It includes 15 items evaluating different aspects of sexual function. There are several answering options for each question (range 0-5), 0 being absence of sexual activity or inability to have sexual intercourse. These items may be pooled into five dimensions or domains: *Erectile function* (questions 1-5 and 15; score range: 1-30), *orgasmic function* (questions 9 and 10; score range: 2-10), *sexual desire* (questions 11 and 12; score range: 2-10), *satisfaction with the sexual intercourse* (questions 6-8; score range 0-15), and *global satisfaction* (questions 13 and 14; score range: 2-10). Besides, the questionnaire has a global score that is obtained by adding the scores obtained in all items (score range: 5-75).

Erectile dysfunction (ED) may be defined as the persistent inability to achieve and maintain an adequate erection allowing a satisfactory sexual intercourse⁷. The IEFT allows its identification and its stratification into several grades according to the scores obtained in the *erectile function* domain:¹⁸ absence of ED (score ≥ 26), mild ED (score range: 17-25), moderate ED (score range: 11-16), and severe ED (score range: 6-10).

Complete execution of the IEFT was only done in those patients that had some level of sexual activity (either with their couple or by self-stimulation). Those patients having no sexual activity at all only answered to the questions relating to sexual desire.

Besides the questions included in the questionnaire, and aiming at assessing the psychological adaptation to suffering a potential sexual dysfunction, each one of the patients (independently of whether sexually active or not) were asked the following question: *In case of sexual dysfunction, would you agree*

FORMA FISICA		SENTIMIENTOS	
Durante las 2 últimas semanas... ¿Cuál ha sido la máxima actividad física que pudo realizar durante, al menos, 2 minutos?		Durante las 2 últimas semanas... ¿En qué medida le han molestado problemas emocionales tales como sentimientos de ansiedad, depresión, irritabilidad o tristeza y desánimo?	
Muy intensa (por ejemplo: correr de prisa)	 1	Nada, en absoluto	 1
Intensa (por ejemplo: correr con suavidad)	 2	Un poco	 2
Moderada (por ejemplo: caminar a paso rápido)	 3	Moderadamente	 3
Ligera (por ejemplo: caminar despacio)	 4	Bastante	 4
Muy ligera (por ejemplo: caminar lentamente o no poder caminar)	 5	Intensamente	 5

Fig. 1.—An example of the COOP/ WONCA slides (spanish version).

with the administration of some remedy (including medication) to improve it?

Health-related quality of life (HRQOL)

Simultaneously to IEFT, the patients filled the Spanish version of the COOP/WONCA slides¹⁹. This is a generic, valid, brief, and easy to understand quality of life questionnaire. It includes nine slides, each one of them assessing one quality of life dimension (*physical functioning, emotions, daily living activities, social activity, health change, health status, pain, social support, and quality of life*), with a statement raising a question on functional status of the patient within the last 2 weeks. There are five possible answers to each statement that represent the functional status of the individual following an ordinal scale (1-5), in such a way that the highest scores relate to the poorest health status. All the answers are graphically illustrated with drawings, which helps with the understanding and answering^{19,20} (fig. 1). Initially designed to assess HRQOL of patients in the primary care setting, its usefulness in other population groups has been argued, among which are renal patients²¹. In a previous

study, our group has demonstrated the validity of the COOP/WONCA slides to assess HRQOL in dialysis patients, bringing an information similar to that provided by more complex questionnaires without losing the psychometric quality²². Filling of both questionnaires (IEFT and COOP/WONCA slides) was done out of the dialysis session, with the help of an interviewer that in all cases was a nephrologist. His/her task was limited to reading the questions set up in the questionnaires and the explanation of some terms (in the most neutral way possible) in case of lack of understanding.

STATISTICAL ANALYSIS

Data have been analyzed by the Statistical Social Sciences (SPSS 12.0) software. A descriptive determination is done for the different variables. Spearman's correlation is used for the relational analysis, and Mann-Whitney U test and Kruskal-Wallis H test are used for the differences between two or more groups. The chi-squared test was used to compare qualitative variables. A linear regression analysis was done to establish those factors determining se-

Table I. Socio-demographical and medical data (n = 103)

Variable		Variable	
Age (mean ± SD)	61.3 ± 14.1	Comorbidity (%)	
Time on HD (months)	41.7 ± 56.2	Coronary heart disease	15%
CRF etiology		AHT	65%
Glomerulonephritis	14	Other cardiovascular problems	41%
Vascular nephropathy	25	Respiratory disease	30%
Diabetic nephropathy	6	Neurological problems (including CVA)	23%
Interstitial nephropathy	23	Gastrointestinal problems	49%
Inherited nephropathies	12	Musculoskeletal problems (incluye enfermedad ósea)	72%
Other causes	5	Diabetes	12%
Unknown	18	Infection	3%
Administration of drugs that may interfere with erectile function (%)		Hepatopatía	27%
β-Blockers	21	Arthropathy	17%
SSRI*	4	Hematological problems (no including anemia)	11%
Clonazepam	2	Neoplasm	10%
Dopaminergic antagonists	3	Infections	3%
Anticonvulsants	1	Comorbidity index	3.14 ± 1.51
Digoxine	4	Laboratory parameters	
Fibrates	1	Hematocrit (%)	36.1 ± 4.7
Statins	6	Hemoglobin (g/dl)	11.5 ± 1.6
Estrogens	1	Total proteins (g/dl)	7 ± 0.6
		Albumin (g/dl)	3.7 ± 0.4
		Kt/V	1.27 ± 0.21
		iPTH	217 ± 263

* SSRI: Serotonin re-uptake inhibitors.

sexual activity and a covariance analysis to dissipate the influence of variables such as age, time on HD, and comorbidity on sexual activity for determining HRQOL scores. A p value < 0.05 was considered as being significant. The results are expressed as mean ± standard deviation.

RESULTS

One hundred and three patients completed the questionnaires. Demographical and medical data are shown in table I. The pathology most frequently associated to renal disease was musculoskeletal disorders, arterial hypertension, and gastrointestinal disease. Almost 30% of the patients were taking some medication that may interfere on erectile function (especially beta-blockers).

Almost half of the patients (47%) stated having no sexual activity at all. These patients had older age, were for longer time on dialysis, had higher morbimortality index, and lower serum albumin levels than those patients sexually active (table II). About HRQOL, male patients with sexual activity had better

physical performance and better *health status*, and lower difficulty in doing *daily living activities* and *pain*. There were no differences in the remaining domains (table III).

The IEF7 was filled-in completely only by those patients having some sexual activity. Values of each one

Table II. Demographical and medical variables by existence or absence of sexual activity

	Sexually active	Without sexual activity	p
Age (years)	55.4 ± 14.6	68.1 ± 10.1	< 0.001
Time on HD (months)	42.4 ± 52.7	74.8 ± 66.3	< 0.01
Comorbidity index	3.2 ± 1.5	4.1 ± 1.8	< 0.05
Hematocrit (%)	36.1 ± 4.2	36.2 ± 5.2	ns
Hemoglobin (g/dl)	11.6 ± 1.5	11.4 ± 1.7	ns
Total proteins (g/dl)	7 ± 0.6	7 ± 0.6	ns
Albumin (g/dl)	3.8 ± 0.4	3.6 ± 0.4	< 0.05
iPTH (ng/ml)	216 ± 231	220 ± 299	ns
KTV	1.2 ± 0.2	1.3 ± 0.2	ns

Mann-Whitney U test.

Table III. Results of the COOP/WONCA slides in all patients and scoring differences by existence of sexual activity

	n = 103	With sexual activity (n = 55)	Without sexual activity (n = 48)	p
Physical status	2.80 ± 1.17	2.35 ± 1.14	3.31 ± 0.98	< 0.001
Emotions	2.13 ± 1.15	2.11 ± 1.12	2.15 ± 1.20	ns
Daili living activities	2.05 ± 1.11	1.82 ± 1.00	2.31 ± 1.17	< 0.05
Social activities	1.63 ± 0.96	1.56 ± 0.98	1.71 ± 0.94	ns
Health change	2.48 ± 0.93	2.49 ± 0.92	2.46 ± 0.94	ns
Health status	3.33 ± 0.93	3.16 ± 0.90	3.52 ± 0.94	< 0.05
Pain	2.26 ± 1.36	2.00 ± 1.29	2.56 ± 1.39	< 0.05
Social support	2.28 ± 1.04	2.49 ± 1.18	2.04 ± 0.80	ns
Quality of life	2.36 ± 0.76	2.38 ± 0.83	2.33 ± 0.69	ns

Mann-Whitney U test.

of the five domains are shown in table IV. According to the scores in *erectile function*, 34.5% had mild, 16.4% moderate, and 9.1% severe erectile dysfunction. In order to determine the influence of the different demographical and clinical variables on the different domains of the IEFT, a relational analysis was performed (table V). Only age was significantly correlated with *erectile function* ($r = -0.33$; $p < 0.05$). There were no statistically significant differences by etio-

Table IV. IEFT: mean scores in the different domains (only considered those from sexually active patients)

Domain	Mean values	Score range
Erectile function	21.2 ± 7.2	1-30
Orgasmic function	8.3 ± 2.6	0-10
Satisfaction with the sexual intercourse	9.8 ± 3.3	2-10
Sexual desire	6.1 ± 2.1	0-15
Global satisfaction	6.4 ± 2.6	2-10
Global score	51.8 ± 14.5	5-75

logy of CRF or prescription of medications with a potential to interfere with erectile function.

Table VI shows the correlation indexes between total IEFT score and the different COOP/WONCA slides. Patients with higher total scores (that represents better sexual function) had better scores in each one of the slides, although only *emotions*, *daily living activities*, *social activities*, *social support*, and *quality of life* dimensions reached statistical significance.

In order to analyze the determinant factors on sexual activity, a linear regression analysis was carried out in which age, time on HD, comorbidity, labora-

Table V. Correlation between the different dimensions gathered with the IEEF questionnaire and the medical and socio-demographical variables (only considered those data related to sexually active patients)

	Age	Time on HD	Comorbidity index	Hematocrit	Hemoglobin	Total proteins	Albumin	KTV	iPTH
Erectile function	-0.33*	-0.03	-0.18	-0.11	-0.09	-0.02	0.25	0.01	0.26
Orgasmic function	-0.26	0.01	0.01	-0.14	-0.21	-0.14	0.14	0.06	0.16
Sexual desire	-0.20	0.02	0.22	-0.14	-0.12	-0.09	0.12	0.23	-0.09
Satisfaction with the sexual intercourse	-0.24	0.05	-0.02	-0.10	-0.14	-0.04	0.12	0.11	0.15
Global satisfaction	-0.20	0.10	-0.15	-0.13	-0.10	-0.05	0.08	0.23	0.17

*Significant correlation at 0.05.

Table VI. Correlation between the global IEFT score and the COOP/WONCA slides

	Physical status	Emotions	Daily living activities	Social activities	Health status	Pain	Social support	Quality of life
Global score IEFT	-0.23	-0.34*	-0.27*	-0.30*	-0.22	-0.14	-0.45†	-0.29*

*Significant correlation at 0.05. †Significant correlation at 0.01.

tory parameters, and the different dimensions of the COOP/WONCA slides were included as independent variables. Age, physical status, and time on HD were the main determinants of sexual activity, making 32.7% of its variance.

About the predisposition to the prescription of remedies (including medications) aimed at improving erectile function in case of impotence, 40 patients were in favor, 51 were against, and 12 did not have a clear answer. When these results were analyzed considering functioning of sexual activity, there were significant differences; thus, most of the patients with no sexual activity were against, whereas those sexually active were in favor ($\chi^2 = 9.62$; $p = 0.002$).

DISCUSSION

HRQOL is nowadays considered one of the main therapeutic goals in CRF patients needing renal replacement therapy (dialysis, renal transplant) to keep alive²³. One of the essential conditions to reach a good HRQOL is the possibility of having satisfactory sexual activity. Similarly to previous studies^{2-10,12,24}, the prevalence of some sort of sexual dysfunction (decrease of sexual activity and desire, and deterioration of erectile function) in our study was very high (above 70%). We could not precisely determine the time of onset of these problems, since most of our patients were on dialysis for a long time, although almost all agreed in sexual function deterioration once dialysis had already been started. A high proportion of patients were sexually inactive. ED was highly prevalent; thus, among sexually active patients, more than 60% had some degree of ED, whereas 72.9% of those lacking sexual activity declared a markedly reduced or completely lost erectile capacity.

Several authors have found a correlation between libido decrease and potency decrease^{4,12,24}. The results of our study show a similar trend, finding higher sexual desire in the group of sexually active patients (6.1 ± 2.1 vs. 3.6 ± 1.9 ; $p < 0.01$), as well as a gradual libido decrease as the score in erectile function decreases ($r = 0.32$; $p < 0.05$). However, and although this correlation seems to be true, it is virtually impossible to differentiate the cause from the effect.

Our patients generally showed an acceptable HRQOL (table III), with mean scores within what we could call « a favorable area of quality of life » (below 3). However, when these results were evaluated depending on the function of sexual activity, sexually active patients had better *physical status*

and *health status*, and lower *pain* and difficulty to perform *daily living activities* than those with no sexual activity, these differences being, at least in part, are conditioned by differences in age, time on HD, and comorbidities between both groups (Table II). However, the scores of other HRQOL dimensions, less influenced by age, such as *emotions* (which reflect mental functioning), *social activity*, *social support*, and perceived *quality of life* did not differ significantly between both groups. Besides, 72.1% of sexually inactive patients were against prescription of any kind of remedy aimed at improving their sexual functioning, which may show a psychological adaptation to their current situation. In this way, most of the patients with no sexual activity do not seem to perceive this deficit as a problem, considering it as part of the normal aging process or rejecting it based on their own social or cultural circumstances. This confirms the difference pointed out by Diemont⁴ between «*sexual dysfunction*» and «*sexual problems*», so that a «*sexual problem*» reflects the assessment that an individual makes of his/her own sexual function. However, HRQOL of sexually active patients does seem to be conditioned by sexual function, so that those patients with better scores in the IEF questionnaire (which reflect better sexual function) have better HRQOL (table VI) shown as lower difficulty to perform daily living activities, better social and mental function, higher social support, and higher quality of life. It has recently been described a HRQOL deterioration in dialysis patients on hemodialysis with ED³. Our results are in agreement with those, but have the advantage of analyzing other aspects of sexual function, besides erectile function.

In agreement with previous studies, age^{4,9}, physical functioning²⁵, and time on HD were the main determinants of sexual activity in our patients. The advances achieved in the last years in HD have allowed obtaining «optimal» laboratory parameters in most of the patients (see standard deviations in table I) and may justify the little influence on sexual functioning; only albumin, a very sensible indicator of the nutritional status, was significantly higher in sexually active patients. Other factors such as renal failure etiology, associated diseases, or administration of drugs that may cause ED do not seem to play a predominant role in the genesis of the problem.

Some works have considered the fact of having stable sexual partner as a conditioning factor for sexual activity^{2,7,12,25}. Although in our opinion it may facilitate a more frequent sexual activity, it does not determine its existence or absence, thus being the reason why we have not considered it.

The recent approval of sildenafil for treating erectile dysfunction in men obliges the nephrologist to change his/her attitude, participating in the resolution of the problem. Many patients suffering from psychogenic, neurogenic, or vascular impotence may benefit from sildenafil prescription so that a profound knowledge of the patient's sexual activity is required. It has been successfully administered to patients on dialysis programs²⁶⁻³¹, and although it is generally well tolerated, there have been reports of severe hypotension³².

The administration and filling-up of the IEFT was very well accepted by our patients. Most of them were in agreement with the content of the questions formulated, and for many of them it represented an opportunity to let the medical team know such problems that they had not been able to speak out previously, either because of shyness, a sense of shame, or other reasons (we may consider that less than 5% of the patients had received information on the possible repercussions of having CRF on sexual functioning). In addition to its brevity (15 minutes average), the questionnaire may be administered periodically, being in our opinion a very useful tool in clinical practice in this type of patients.

We are not aware of similar works undertaken before in Spain analyzing sexual functioning in this type of patients. The use of measuring instruments widely recognized internationally (*IEFT* and *COOP-WONCA slides*) represents one of the major advantages of our study allowing for results comparison with other groups, as well as the performance of multicentre and multinational studies.

In summary, we may conclude that sexual dysfunction is a highly prevalent problem in uremic male patients on HD. Sexually inactive patients seem to have a satisfactory psychological and emotional adaptation to this problem. Finally, referring better sexual condition also perceived better HRQOL, which reflects in performance of social and daily living activities, a less negative emotional experience, a better perceived social support, and a perception that things are going reasonably well.

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