

FUNCIONALIDADE E QUALIDADE DE VIDA EM IDOSOS SUBMETIDOS A ARTROPLASTIA TOTAL DO JOELHO

FUNCTIONALITY AND QUALITY OF LIFE IN ELDERLY PEOPLE SUBMITTED TO TOTAL KNEE ARTHROPLASTY

FUNCIONALIDAD Y CALIDAD DE VIDA EN ANCIANOS SOMETIDOS A ARTROPLASTIA TOTAL DE RODILLA

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RESUMO

Objetivo: Avaliar a perceção da funcionalidade do joelho e a qualidade de vida relacionada à saúde (QVRS) em idosos submetidos a artroplastia total do joelho (ATJ).

Métodos: Estudaram-se 40 pacientes em dois momentos de avaliação: no pré-operatório e oito semanas após cirurgia. A QVRS foi avaliada através do MOS SF-36 v2 (Medical Outcomes Study 36-Item Short-Form Health Survey) e a perceção da funcionalidade do joelho através do KOOS (Knee injury and Osteoarthritis Outcome Score).

Resultados: Amostra (71,6±8,1 anos) maioritariamente feminina (62,5%). Os resultados do MOS SF-36 v2 revelam uma melhoria em todas as dimensões da saúde física na segunda avaliação (p <0,05). No domínio da saúde mental também houve melhoria em todas as dimensões, à exceção da vitalidade. A funcionalidade do joelho melhorou nas subescalas: sintomas (p=0,015), dor (p <0,001) e qualidade de vida (p <0,001).

Conclusão: Pacientes avaliados oito semanas após ATJ revelaram melhorias na saúde autopercebida, qualidade de vida, desempenho físico e dor.

Descritores: Qualidade de Vida; Osteoartrite do Joelho; Artroplastia do Joelho.

RESUMEN

Objetivo: Evaluar la percepción de la funcionalidad de la rodilla y la calidad de vida relacionada con la salud (CVRS) en ancianos sometidos a artroplastia total de rodilla (ATR).

Métodos: Se estudiaron 40 pacientes en dos momentos de evaluación: en el preoperatorio y ocho semanas después de la cirugía. La CVRS se evaluó utilizando el MOS-SF-36 v2 (Medical Outcomes Study 36-Item Short-Form Health Survey) y la percepción de la funcionalidad de la rodilla a través del KOOS (Knee injury and Osteoarthritis Outcome Score).

Resultados: Muestra (71,6 ± 8,1 años) en su mayoría mujeres (62,5%). Los resultados del MOS SF-36 v2 sugieren mejoras en todas las dimensiones de la salud física en la segunda evaluación (p <0.05). En la salud mental también ha habido mejoras en todas las dimensiones, excepto la vitalidad. La funcionalidad de la rodilla mejoró en las subescalas: síntomas (p = 0.015), dolor (p <0.001) y calidad de vida (p <0.001).

Conclusión: Los pacientes evaluados ocho semanas después de ATR revelaron mejoras en la salud percibida, la calidad de vida, el rendimiento físico y el dolor.

Descriptores: Calidad de vida; Osteoartritis de la Rodilla; Artroplastia de Reemplazo de Rodilla.

ABSTRACT

Objective: To evaluate perception of knee functionality and health-related quality of life (HRQL) in elderly patients submitted to total knee arthroplasty (TKA).

Methods: 40 patients were studied at two moments of evaluation: in the preoperative period and eight weeks after surgery. HRQL was assessed using the MOS-SF-36 v2 (Medical Outcomes Study 36-Item Short-Form Health Survey) and Knee Injury and Osteoarthritis Outcome Score (KOOS).

Results: Sample (71.6 ± 8.1 years), mostly female (62.5%). The SF-36 v2 MOS results show an improvement in all dimensions of physical health in the second evaluation (p <0.05). In the field of mental health there has also been improvement in all dimensions, except vitality. The functionality of the knee improved in the subscales: symptoms (p = 0.015), pain (p <0.001) and quality of life (p <0.001).

Conclusion: Patients evaluated eight weeks after TKA showed improvements in self-perceived health, quality of life, physical performance and pain.

Keywords: Quality of Life; Osteoarthritis Knee; Arthroplasty Replacement Knee.

INTRODUCTION

Osteoarthrosis (OA) is defined as a degenerative clinical condition characterized by the progressive loss of articular cartilage, which may affect the subchondral bone and compromise the entire joint⁽¹⁾. OA is one of the most frequent chronic diseases of our time and its incidence is expected to continue to increase at the same time as the increase in average life expectancy. It was the most common joint disease in the world and one of the main causes of chronic incapacity, especially in the elderly population⁽²⁾. Age is the main risk factor for the development of OA since the changes that occur at the cellular and tissue level during the aging process make the joints more susceptible to damage and unable to maintain homeostasis⁽³⁾.

As the largest and most requested load joint in the human body, the knee is responsible for most OA situations, symptomatically affecting 45% of elderly people⁽⁴⁾. As a load joint, the knee is quite susceptible to aging changes that enhance the development of arthrosis, of which we can highlight: changes in proprioception and balance, sarcopenia and increased fat mass, osteoporosis, meniscal degeneration and less joint hydration⁽³⁾.

On a symptomatic level, knee OA causes joint pain and stiffness, edema, progressive varus or valgus deformity and slow and limp gait^(3,4). Limitations in walking, climbing and descending stairs and squatting seriously interfere with life and leisure activities. Furthermore, it impairs other aspects of elderly people's lives, such as social interaction, physical and mental functioning and sleep quality⁽⁵⁾. In general, musculoskeletal problems interfere with the quality of life (QL), which can be a cause of early disability or absence from work due to illness⁽⁶⁾.

The symptoms and limitations caused by the pathology have a significant impact on health-related quality of life (HRQL)⁽⁵⁾, so it is essential to relieve pain and control symptoms by medical or surgical treatment, varying according to with the degree of the disease, the level of disability, occupation, age, among other factors.

In addition to arthroscopy, osteotomy and partial arthroplasty, surgical treatment for knee OA includes total knee arthroplasty (TKA). In elderly people with no work activity, and with advanced OA, this last alternative was the most adequate, economical and safe treatment⁽⁷⁾.

The main objectives of TKA are to reduce pain complaints, improve joint range and gait capacity, allowing patients to autonomously acquire their mobility earlier and improve their QL. Thus, after surgery, it is important to quantify these health gains through research, either by analyzing the available scientific evidence or by carrying out new studies.

A study carried out with 52 elderly women interviewed at 3 and 6 months after TKA concluded that, in both postoperative evaluations, the parameters that improved the most were body pain, physical function, vitality and social function⁽⁸⁾. On the contrary, mental health and emotional performance still did not reach normal values at 6 months after surgery.

A recent systematic review analyzed 31 studies on QL after TKA, concluding that TKA provides a better QL early after the surgical procedure, essentially by reducing pain and increasing functionality⁽⁹⁾. The preoperative factors that correlate most positively with QL in the postoperative period were less claudication, better sleep quality, levels of physical activity practiced before the procedure and adequate family and social support⁽⁹⁾.

Several studies were carried out using specific instruments to assess the functionality of the knee, namely the KOOS. One of them had 39 patients undergoing TKA as participants, who were evaluated through measures of functional performance, namely using the 6-minute walk test, Timed Up and Go and KOOS⁽¹⁰⁾. Participants were evaluated before surgery and at three subsequent times (1, 3 and 6 months after TKA). The investigation revealed worse results in the 6-minute walk test and in the Up and Go test after one month, with the results having improved significantly afterwards at 3 and 6 months. As for the KOOS values, the investigation concluded that there was an increase in knee functionality at all moments of follow-up, except for the subscale related to sports and leisure activities, whose improvement was only noticeable after 3 months⁽¹⁰⁾. The authors mention that self-reported measures are overrated by users at 30 days, probably due to improvements in pain relief, but that this is not reflected in the functional performance assessed by the 6-minute walk and the Timed Up and Go test⁽¹⁰⁾.

Taking into account the above, we developed an investigation that aimed to evaluate the perception of functionality/problems in the knee and HRQL in elderly people undergoing TKA. They constituted our specific goals. (i) Characterize patients according to sociodemographic variables (gender, age) and body mass index (BMI); (ii) Compare the results obtained in the preoperative period and eight weeks after surgery in relation to the perception of the patients' QL (iii) Compare the results obtained in the preoperative period and eight weeks after surgery in relation to the perception of the degree of knee functionality.

METHOD

Taking into account the objectives of the investigation, a quantitative and prospective longitudinal study was designed, with two evaluation

moments: before the surgery and 8 weeks after the surgical procedure.

The sample consisted of all elderly people diagnosed with knee OA who consecutively underwent TKA at the Hospital Terra Quente (HTQ) for a period of 6 months. The study excluded patients for knee prosthesis review, patients undergoing partial knee prosthesis, patients who underwent TKA whose underlying pathology was not knee OA, and patients who had the following postoperative complications: infection, wound dehiscence surgery and joint effusion. It should be noted that all patients who participated in the study had, during hospitalization, rehabilitation nursing care, namely in terms of positioning of the intervened limb, getting up from bed for the first time after surgery, recovery of joint range and teaching and preparation for discharge.

In addition to the gender, age and BMI variables, the following constructs were included in the study: (i) Health-related quality of life, assessed through the Medical Outcomes Study 36-Item Short-Form Health Survey (MOS SF-36 v2) ; (ii) Perception of functionality/knee problems, assessed using KOOS.

The MOS SF-36 v2 is used to investigate the quality of life of individuals with or without disease and is structured into 36 items. Its completion time is in average 10 minutes and can be completed by the individual or by interview. Its quality of life measures are considered the gold standard in health-related studies⁽¹¹⁾. The SF-36 v2 assesses quality of life in the physical and mental component. The physical component includes the following dimensions: Physical function (FF), Physical performance (PP), Body pain (BP) and Health in general (HG). In turn, the mental component integrates the following dimensions: Vitality (VT), Social Function (SF), Emotional Performance (EP) and Mental Health (MH).

Regarding the KOOS questionnaire, it aims to measure the perception of functionality/knee problems. Its average filling time is 10 minutes and aims to assess five dimensions that are scored separately: pain (9 items) symptoms other than pain (7 items), activities of daily living (7 items), sports and leisure activities (5 items) and quality of life related to knee functionality (4 items). Dimension scores are presented on a positive orientation scale where 0 corresponds to extreme problems and 100 corresponds to no knee problems.

Several studies show that the KOOS questionnaire has good evidence of reliability and construct validity^(12,13).

The study project was approved by the HTQ administration and all users agreed to participate in the investigation in a free and informed way, signing the informed consent. To avoid biases, data were collected by the same investigator in both evaluation moments.

To process the information, the statistical program Statistical Package for the Social Sciences (SPSS) was used. The classic procedures of descriptive and inferential statistics were followed. The t-test for

paired samples was used for a reference level of significance of $p < 0.05$.

RESULTS

The sample consisted of 40 elderly people, mostly female (62.5%). We found an average age close to 72 years and an average BMI of 27.2Kg/m². The subjective health status was assessed by the first question of the SF-36 v2, a question that does not integrate any dimension of the instrument and is considered an item of global assessment of self-perceived health. As shown in Table 1, there was a more favorable trend of responses during the second assessment moment (M2), where 55% of respondents reported that their health was Good, a value that compares with the 35% obtained in the first assessment (M1). On the other hand, there was a decrease between M1 and M2 in the Fair (52.5% vs 37.5%) and Poor (7.5% vs 2.5%) health categories.

	Sample	
<i>Gender</i>		
Female, n (%)	25 (62.5)	
Male, n (%)	15 (37.5)	
TOTAL, n (%)	40 (100.0)	
Age, (M±DP)	71,6±8,1	
IMC, (M±DP)	27.2±3.9	
<i>In general, I would say that your health is:</i>	Moment 1	Moment 2
Great, n (%)	1 (2,5)	1 (2,5)
Very good, n (%)	1 (2,5)	1 (2,5)
Good, n (%)	14 (35.0)	22 (55.0)
Reasonable	21 (52.5)	15 (37.5)
Weak, n (%)	3 (7,5)	1 (2,5)
TOTAL, n (%)	40 (100.0)	40 (100.0)

Table 1- Study participants distributed by gender, mean age and mean BMI values. Results obtained for the subjective state of health

Table 2 compares the means obtained in the physical component of the SF-36 v2 (FF, DF, DC and SG) in the two evaluated moments. There were statistically significant improvements ($p < 0.05$) in all dimensions of the physical component at the second time of evaluation.

	Moment 1 (M±DP)	Moment 2 (M±DP)	p
Physical function (FF)	48.8±7.0	53.6±11.1	0.005
Physical performance (PP)	52.5±11.0	58.4±11.2	0.001
Body pain (BP)	42.2±12.4	71.6±12.0	<0.001
Health in general (HG)	61.9±11.2	67.8±10.0	<0.001

M- Average; DP-Standard deviation; p- Significance t test for paired samples

Table 2- Averages obtained in the two evaluation moments for the dimensions Physical function, Physical performance, Body pain and Health in general

Regarding the mental component of the SF-36 v2, and analyzing the variations in the means recorded in M1 and M2 in the different subscales (VT, SF, EP, MH) through the t test for paired samples (Table 3), we concluded that there was a significant improvement ($p < 0.05$) in quality of life in all dimensions, except vitality (VT) ($p = 0.062$).

	Moment 1	Moment 2	p
	(M±DP)	(M±DP)	
Vitality (VT)	58.9±7.2	62.0±8.3	0.062
Social function (SF)	54.3±13.4	69.2±9.7	<0.001
Emotional performance (EP)	54.5±14.0	66.5±12.6	<0.001
Mental health (MH)	55.3±11.0	64.0±7.5	<0.001

M- Average; DP-Standard deviation; p- Significance t test for paired samples

Table 3- Averages obtained in the two evaluation moments for the Vitality, Social Function, Emotional Performance and Mental Health dimensions

The comparison between the mean values of the first and second assessments related to the KOOS questionnaire (Table 4) reveals statistical significance in the symptoms, pain and quality of life dimensions. The difference in means observed for activities of daily living and sport/leisure activities did not show statistical relevance.

	Moment 1	Moment 2	p
	(M±DP)	(M±DP)	
Symptoms	62.4±15.4	66.5±11.9	0.015
Pain	58.6±12.5	71.8±15.6	<0.001
Activities of Daily Life	61.7±13.2	64.0±11.1	0.060
Sports/leisure activities	13.6±3.0	13.9±11.4	0.885
Quality of life	43.8±11.4	49.9±11.4	<0.001

M- Average; DP-Standard deviation; p- Significance t test for paired samples

Table 4 - Comparison of the means obtained in the two evaluation moments in the KOOS questionnaire

DISCUSSION

The first topic of discussion refers to the fact that the sample studied is mostly made up of female elements. In epidemiological terms, this result is corroborated by studies that found a higher prevalence of OA in women, namely 72%⁽¹⁴⁾ and 88.5%⁽¹⁵⁾. These results may be explained by postmenopausal osteoporosis and by the fact that women have less muscle mass than men^(16,17).

Regarding the BMI, an average value of 27.2 kg/m² was obtained. Excess weight, due to the increase in intra-articular pressure it causes, is considered an increased risk factor for the development of knee OA. The results of the Framingham study show that women who lost about 5 kg of their weight had a 50% reduction in the risk of developing symptomatic OA of the knee⁽¹⁸⁾. On the other hand, weight loss has been associated with improved physical function and pain reduction in multiple studies^(19,20).

As for the SF-36 v2, we obtained significant changes in the direction of improving health status and QL, at the second time of assessment, in relation to all dimensions of the physical component, and to all dimensions of the mental component, except for vitality. Fracasso and Kaipper (2012) studied the perception of functionality in activities of daily living and QL in patients undergoing TKA and verified, through the application of the MOS SF-36, that there was an improvement in symptoms, as well as in functional limitations with a tendency to improvement in quality of life 15 days after surgery⁽²¹⁾. A systematic review concluded that TKA improves QL especially with regard to pain and functionality⁽⁹⁾.

In our study, the analysis of the perception of functionality/problems in the knee was performed using KOOS, concluding that there was a significant improvement in symptoms, pain and QL. Our results are in line with those reported by a study that evaluated 13 patients preoperatively and at 4 weeks after surgery, concluding that there was a significant decrease in pain over this period of time⁽²²⁾. Stevens-Lapsley and collaborators developed a study with 39 patients undergoing TKA, evaluated at three different times (1, 3 and 6 months after surgery) through measures of functional performance, namely using the 6-minute gait test, Timed Up and Go and KOOS questionnaire⁽¹⁰⁾. As for the KOOS results, the investigation concluded there was an increase in knee functionality at all times of follow-up, with the exception of the subscale related to sports and leisure activities, whose improvement was only noticeable after the assessment at 3 months⁽¹⁰⁾.

CONCLUSION

Regarding the QL assessed by the MOS SF-36 v2 it was concluded that there were statistically significant improvements ($p < 0.05$) in all dimensions of the physical component (physical function, physical performance, body pain and health in general) at the second moment of evaluation. In the mental component there was improvement ($p < 0.05$) in all dimensions (social function, emotional performance and mental health), except for vitality ($p = 0.062$).

For the dimensions of the questionnaire used to assess the perception of functionality/knee problems (KOOS), it was found that in the second assessment there was a tendency to decrease pain and improve symptoms.

Taking into account that the concept of quality of life is related to the person's health status and that the pain and functional limitation caused by OA negatively

influence the well-being and performance of activities of daily living, it can be concluded that TKA contributes to the improvement of the person's physical quality and performance. It was also observed that TKA, in addition to revealing an improvement in physical performance, also contributed significantly to the improvement of the participants' emotional and social activity.

Our study has several limitations, of which we highlight those arising from a non-probabilistic sampling process with a small number of participants, which hinders the generalization of the results. However, the data we present may serve as comparative values in rehabilitation programs for patients undergoing TKA. On the other hand, and given the small number of studies carried out in Portugal that used the KOOS questionnaire, this study may encourage the use of this tool in the assessment of knee functionality, at the level of specialized practice in rehabilitation nursing. It is suggested to carry out further studies with larger samples and with different follow-up time intervals. It is also suggested, in future studies, the inclusion of other variables related to the rehabilitation process, namely if it was continued after discharge from the hospital unit.

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