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IMPACTO DE UM PROJETO DE REABILITAÇÃO NA COMUNIDADE: ESTUDO QUASI-EXPERIMENTAL

IMPACT OF A REHABILITATION PROJECT IN THE COMMUNITY: QUASI-EXPERIMENTAL STUDY

IMPACTO DE UN PROYECTO DE REHABILITACIÓN EN LA COMUNIDAD: ESTUDIO CUASIEXPERIMENTAL

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RESUMO

Introdução: A reabilitação na comunidade melhora a acessibilidade da população a serviços de reabilitação flexíveis e económicos. A sua ampliação é fundamental, contudo a evidência dos benefícios da integração nos cuidados primários ainda é reduzida. Este estudo tem como objetivo avaliar o impacto de um Projeto de Reabilitação executado pelo Enfermeiro Especialista em Enfermagem de Reabilitação na comunidade.

Metodologia: Estudo quasi-experimental, com amostra não probabilística acidental constituída por 126 utentes. Aplicados instrumentos de avaliação antes e após as intervenções, Escala Numérica da Dor, Medical Research Council Muscle Scale e Índice de Barthel.

Resultados: O Diagnóstico de Enfermagem "Dor musculoesquelética" presente em 98,41% dos utentes na Fase 1 diminuiu para 25,40% na Fase 2. O Diagnóstico de Enfermagem "Movimento muscular comprometido" diminuiu de 80,16% para 15,87% na Fase 2. O Diagnóstico de Enfermagem "Autocuidado dependente" presente em 65,08% na Fase 1 diminuiu para 8,73% na Fase 2. As diferenças encontradas foram estatisticamente significativas.

Discussão: A reabilitação melhora a independência da pessoa e antecipa o regresso ao trabalho. Assim, o acesso a cuidados de reabilitação poderá contribuir para a diminuição do absentismo. As intervenções realizadas pelo Enfermeiro Especialista em Enfermagem de Reabilitação levaram à diminuição da dor musculoesquelética, aumento da força muscular e melhoria no autocuidado, à semelhança do demonstrado em outros estudos.

Conclusão: Os resultados obtidos comprovam o efeito positivo das intervenções executadas pelo Enfermeiro Especialista em Enfermagem de Reabilitação e evidenciam o impacto de um Projeto de Reabilitação. Este profissional assume uma posição privilegiada na implementação de medidas que fomentem a reabilitação na comunidade.

Descritores: Enfermagem de reabilitação; Cuidados de saúde na comunidade; Dor musculosquelética; Força muscular; Autocuidado.

ABSTRACT

Introduction: Community rehabilitation improves the population's accessibility to flexible and affordable rehabilitation services. Its expansion is essential, however the evidence of the benefits of its integration in primary care is still limited. This study aims to evaluate the impact of a Rehabilitation Project carried out by the Rehabilitation Specialist Nurse in the community.

Methodology: Quasi-experimental study, with an accidental non-probabilistic sample consisting of 126 users. Assessment instruments were applied before and after interventions, Numerical Pain Scale, Medical Research Council Muscle Scale and Barthel Index.

Results: The Nursing Diagnosis "Musculoskeletal pain" present in 98.41% of users in Phase 1 decreased to 25.40% in Phase 2. The Nursing Diagnosis "Impaired muscle movement" decreased from 80.16% to 15.87% in Phase 2. The Nursing Diagnosis "Dependent self-care" present in 65.08% in Phase 1 decreased to 8.73% in Phase 2. The differences were statistically significant.

Discussion: Rehabilitation improves the person's independence and anticipates their return to work. Thus, access to rehabilitation care may contribute to reducing absenteeism. The interventions carried out by the rehabilitation specialist nurse led to a reduction in musculoskeletal pain, an increase in muscle strength and an improvement in self-care, similar to what has been demonstrated in other studies.

Conclusion: The results prove the positive effect of the interventions carried out by the rehabilitation specialist nurse and highlight the impact of a Rehabilitation Project. This professional assumes a privileged position in the implementation of measures that promote rehabilitation in the community.

Descriptors: Rehabilitation nursing; Community health care; Musculoskeletal pain; Muscle strength, Self-Care.

RESUMEN

Introducción: La rehabilitación comunitaria mejora la accesibilidad de la población a servicios de rehabilitación flexibles y económicos. Su ampliación es fundamental, pero la evidencia de los beneficios de integración en la atención primaria es limitada. Este estudio tiene como objetivo evaluar el impacto de un Proyecto de Rehabilitación realizado por el Enfermero Especialista en Enfermería de Rehabilitación en la comunidad.

Metodología: Estudio cuasiexperimental, con una muestra no probabilística accidental compuesta por 126 usuarios. Se aplicaron instrumentos de evaluación antes y después de las intervenciones, Escala Numérica del Dolor, Escala Muscular del Medical Research Council e Índice de Barthel.

Resultados: El Diagnóstico de Enfermería "Dolor musculoesquelética" presente al 98,41% en la Fase 1 disminuyó al 25,40% en la Fase 2. El Diagnóstico de Enfermería "Movimiento muscular deteriorado" disminuyó del 80,16% al 15,87% en la Fase 2. El Diagnóstico de Enfermería "Autocuidado dependiente" presente al 65,08% en la Fase 1 disminuyó al 8,73% en la Fase 2. Las diferencias fueron estadísticamente significativas.

Discusión: La rehabilitación mejora la independencia de la persona y adelanta su reincorporación al trabajo. Así, el acceso a la rehabilitación reduce el ausentismo. Las intervenciones del Enfermero Especialista en Enfermería de Rehabilitación condujeron a la reducción del dolor musculoesquelética, aumento de la fuerza muscular y mejora del autocuidado, similar a lo demostrado en otros estudios.

Conclusión: Los resultados prueban el efecto positivo de las intervenciones del Enfermero Especialista en Enfermería de Rehabilitación y resaltan el impacto del Proyecto de Rehabilitación. Este profesional asume una posición privilegiada en la implementación **de medidas que promuevan la r**ehabilitación en la comunidad.

Descriptores: Enfermería de Rehabilitación; Atención de salud comunitaria; Dolor musculoesquelético; Fuerza muscular, Autocuidado.

INTRODUCTION

Community rehabilitation has been an effective strategy to improve the population's access to flexible and affordable rehabilitation services[1, 2].

Around 2.41 billion people would benefit from rehabilitation services[3], which means that at least one in every three people in the world needs rehabilitation at some point. However, in many countries it is not seen as a priority and lacks resources. Reinforcing rehabilitation in primary health care is essential to overcome the huge gap in the provision of these services[3] and can guarantee expansion in order to respond to these needs[2, 3].

The need to intensify community-based rehabilitation is clearly stated[4] and the WHO recommendations "Rehabilitation 2030" argue that rehabilitation services must be integrated into the health system and be available in the community[5]. In addition to the beneficial health effect, rehabilitation provided in the community leads to broader social benefits. Early intervention provided in primary care can substantially reduce the prevalence and delay the onset of disabling effects of chronic conditions in the elderly, adults and children. Carried out in close proximity to people, it helps them to perform better and remain in the job market, as well as to remain independent for longer, also contributing to the reduction of costs, both for the individual and for society[3].

Although there are some examples of effective community rehabilitation programs, evidence of the benefits of integrating rehabilitation into primary care is still limited, reinforcing the importance of incorporating research in this area[3]. Several studies demonstrate the importance of interventions by the Specialist Nurse in Rehabilitation Nursing (SNRN) in obtaining health gains[6, 7, 8, 9, 10]; however, there are few studies that prove the importance of the SNRN in the community and demonstrate the results of their interventions.

Advancement in knowledge requires that the SNRN develop an evidence-based practice, oriented towards results sensitive to Nursing care and incorporate research into its clinical practice[11]. Thus, interest arose in analyzing the impact of interventions carried out by SNRN, with this study's main objective being to evaluate the effect of rehabilitation nursing interventions carried out by SNRN, in a rehabilitation project developed in the community, specifically with regard to musculoskeletal pain, muscle strength and self-care.

METHODOLOGY

A quasi-experimental study with a pre-test, post-test design was carried out with a single group, having as context a Community Rehabilitation Nursing Project (CRNP), developed by SNRN in an outpatient clinic, in a Community Care Unit (UCC) from the central region of Portugal.

This study aimed to answer the Research Question: What is the effect of rehabilitation nursing interventions on users who were part of the CRNP?

Hypotheses were defined as H1: Users who participated in CRNP showed a reduction in musculoskeletal pain; H2: Users who participated in CRNP showed increased muscle strength; H3: Users who joined the CRNP had a lower degree of dependence on self-care.

The sample consisted of 126 users, using non-probabilistic sampling of the accidental type with the inclusion criteria: users referred to the CRNP with the Nursing Diagnoses (ND), "Present musculoskeletal pain" (reduced, moderate degree or elevated); "Impaired muscle movement" (reduced, moderate or high degree); "Self-care: dependent" (low, moderate or high degree) and users who voluntarily agreed to participate in the study.

Data collection took place between November 2022 and August 2023. Users received the same standard of care, for each user a Rehabilitation Nursing Plan was drawn up, which was applied in rehabilitation consultations (treatment sessions) whenever by the same SNRN. This Rehabilitation Nursing Plan was defined based on the initial assessment carried out by the SNRN, using the language of the International Classification for Nursing Practice (ICNP), it was individualized according to the needs of each person and optimized using available material resources. best suited to each situation. The number of sessions performed for each user varied between 10 and 20 sessions, according to the prescription and/or clinical evolution, the frequency was three times a week, lasting one hour. The Numerical Pain

Scale (NPS) was used to monitor musculoskeletal pain, the Medical Research Council Muscle Scale (MRCMS) to monitor muscle strength and the Barthel Index (BI) to assess dependence on self-care.

The NPS consists of a ruler that allows the user to intensify the pain they feel through a numerical classification, where 0 corresponds to "No Pain" and 10 to "Maximum Pain"[12].

The MRCMS assesses muscle strength, grading strength levels between 0 and 5, with 0 corresponding to the absence of strength (no palpable or visible muscle contraction) and 5 corresponding to normal strength[13].

The BI is an instrument that assesses the level of independence in carrying out 10 activities of daily living from the focuses of the Self-Care documentary standard: Getting ready; Drinking; Eating; Hygiene; Going to the toilet, and Clothing. The score varies between 0 and 100, where zero corresponds to maximum dependence and 100 to total independence[13]. Self-care is an activity performed by the person themselves, to remain operational, deal with basic individual needs and activities of daily living[14].

These instruments were applied in the first rehabilitation consultation (before starting treatment) called Phase 1 and in the last rehabilitation consultation (after treatment) called Phase 2.

This study received a favorable opinion (Process no. 134/2022) from the Health Ethics Committee of the Institution where it was developed. In order to safeguard the rights of participants in this research, the ethical principles of autonomy, beneficence, non-maleficence and justice were also respected.

The data were coded by numbers, entered and analyzed using the IBM SPSS version 29 computer program. Descriptive statistics were used by calculating frequencies, means and percentages. For inferential analysis, the Kolmogorov-Smirnov statistical tests were applied to analyze normality and Wilcoxon to compare means, considering $p < 0.05$ or a 95% confidence interval as a significance level.

RESULTS

The sociodemographic characterization of the study participants was carried out regarding the variables gender, age and clinical situation (Table 1).

Regarding the gender variable, it was found that the majority of participants were female (63%, n=80). As for the age variable, the average was 59.52 years old, with a minimum value of 18 and a maximum of 89 years old.

With regard to the clinical situation, 51.59% (n=65) were in post-operative (PO) situations, with a predominance of Total Knee Prosthesis (PTJ) (33.85%, n=22) ; 43.65% of users had a Certificate of Temporary Disability (CIT) (n=55), mainly motivated by supraspinatus tendonitis (30.91%, n=17) and low back pain (21.83%, n=12); and 4.76% (n=6) suffered a cerebrovascular accident (CVA).

1503 Rehabilitation Nursing consultations were carried out, totaling an average of approximately 12 consultations per user.

Table 1 – Sample Characterization

Subtitle: n= Absolute frequency; %= Relative frequency; □ = Average;

*Age range varied between 18 and 89 years

	n	%	$\bar{x}$
GENDER			
Male	46	36.51	
Female	80	63.49	
AGE	**[18-89]***		**59.52**
POST-OPERATIVE	**65**	**51.59**	
Total Knee Prosthesis	22	33.85	
Liberation of the Carpal Tunnel	12	18.46	
Total Hip Prosthesis	7	10.77	
Malleolar fracture osteosynthesis	5	7.69	
Osteosynthesis of femur fracture with nail	4	6.16	
Lumbar discectomy	4	6.16	
Supraspinatus tendinoplasty	3	4.61	
Anterior cruciate ligamentoplasty	3	4.61	
Mastectomy	3	4.61	
Total Shoulder Prosthesis	2	3.08	
TEMPORARY DISABILITY CERTIFICATE	**55**	**43.65**	
Supraspinatus tendonitis	17	30.91	
Low back pain	12	21.83	
Fractures (malleolus, kneecap and humerus)	7	12.73	
Carpal tunnel syndrome	5	9.09	
Ganserinus tendonitis	4	7.27	
Plantar fasciitis	4	7.27	
Shoulder dislocation	3	5.45	
Neck pain	3	5.45	
CEREBRAL VASCULAR ACCIDENT	**6**	**4.76**	
Total Rehabilitation Consultations	1503		11.93
Total users	**126**	**100**	

Of the 126 users who joined the PERC, 98.41% (n=124) had DE: "present musculoskeletal pain", with 87.90% (n=109) having high-grade musculoskeletal pain (GE) and 12.10 % (n=15) had moderate musculoskeletal pain (GM); 101 users (80.16%) had DE: "impaired muscle movement", with 31.68% (n=32) having impaired muscle movement in GM and 68.32% (n=69) had DE: "impaired muscle movement" to a reduced degree (GR); 65.08% of users had dependence on self-care, with 8.54% (n=7) having DE: "dependent self-care" in GE; 35.36% (n=29) had DE: "dependent self-care" in GM and 56.10% (n=46) had DE: "dependent self-care" in GR.

The comparison of results obtained between Phase 1 and Phase 2 (Table 2) shows that in relation to the ND: "present pain" there was a decrease in users with pain in Phase 1 (98.41%, n=124) for Phase 2 (25.40%, n=32), and in Phase 2 no user presented pain in GE; 6.25% (n=2) of users reported feeling pain in GM and 93.75% (n=30) reported pain in GR. There was a reduction in the mean pain value from 6.34 to 0.51 in Phase 2. These differences, according to the Wilcoxon t test (Z), are statistically significant between the two phases (p<0.05), thus corroborating H1: Users who participated in CRNP showed a reduction in musculoskeletal pain.

Regarding the ND: "impaired muscle movement", there was a reduction in the number of users with decreased muscle strength from Phase 1 (80.16%, n=101) to Phase 2 (15.87%, n=20), and these presented impaired muscle movement in GR. The mean value of muscle movement increased from 3.96 in Phase 1 to 4.84 in Phase 2, with the Wilcoxon t test (Z) showing statistically significant differences (p< 0.05) between Phase 1 and Phase 2. This corroborates H2: Users who took part in CRNP showed an increase in muscle strength.

Regarding the DE: "dependent self-care" it was found that dependence on self-care decreased from 65.08% (n=82) in Phase 1 to 8.73% (n=11) in Phase 2. All users dependent on self-care in Phase 2 showed a dependence on GR, with the average BI value increasing from 65.08 in Phase 1 to 99.30 in Phase 2. The differences found, according to the Wilcoxon t test, were statistically significant between the two phases (p <0.05), thus confirming H3: Users who participated in CRNP had a lower degree of dependence on self-care.

Table 2 – Comparison of Results between Phase 1 and Phase 2

Subtitle: n= Absolute frequency; %= Relative frequency; □= Average; KS= Kolmogorov–Smirnov test; WCX= Wilcoxon T test; p= probability of significance; DE= Nursing Diagnosis; MM= Muscle Movement; AC= Self-care; GE= High Grade; GM= Moderate Degree; GR= Reduced Degree.

DE	Stage 1					Stage 2					KS	WCX	
	n	%	Min	Max	$\bar{x}$	n	%	Min	Max	$\bar{x}$	p	Z	p
Pain	**124**	**98.41**	**0**	**8**	**6.34**	**32**	**25.40**	**0**	**3**	**0.51**	**<.001**	**-9.887**	**<.001**
GE	109	87.90				0	0						
GM	15	12.10				2	6.25						
GR	0	0				30	93.75						
MM	**101**	**80.16**	**3**	**5**	**3.96**	**20**	**15.87**	**4**	**5**	**4.84**	**<.001**	**-9.138**	**<.001**
GM	32	31.68				0	0						
GR	69	68.32				20	100						
AC	**82**	**65.08**	**65**	**100**	**89.49**	**11**	**8.73**	**90**	**100**	**99.30**	**<.001**	**-8.078**	**<.001**
GE	7	8.54				0	0						
GM	29	35.36				0	0						
GR	46	56.10				11	100						

DISCUSSION

The majority of study participants are female, in line with other studies that report that women have a greater need for rehabilitation care than men[3,7,9].

The average age was 59.52 years old, contrary to some studies[7,15] that show an older population. However, these results confirm that the need for rehabilitation care is higher in people aged between 50 and 70 years old[3]. According to the authors, worldwide more than 1.6 billion adults aged between 15 and 64 have a disease that would benefit from rehabilitation. This aspect must be taken into account in community rehabilitation programs, which must be comprehensive and cover these ages in order to respond to the needs of users.

PTJ was the most common postoperative situation in this study. Knee osteoarthritis has a prevalence of 12.4% in the Portuguese population, higher than hand and hip osteoarthritis[16]. Therefore, PTJ being the treatment of choice for this condition may justify the high number of users in this situation.

Many of the users referred to CRNP had CIT, this finding is in line with what some authors argue who consider that rehabilitation improves the person's independence, favors their ability to return to work or other social roles and reduces costs associated with absenteeism[5]. Low back pain is very common in users with CIT, corroborating that in adults, low back pain is the main reason for premature exit from the job market. A study carried out in Australia showed that there was 87% less wealth accumulation in individuals who retired early due to lower back problems than in those who remained in a full-time job without health problems. Projections show that the number of people with low back pain will increase in the future in the working-age population, which demonstrates the importance of investing in rehabilitation to obtain individual and social benefits[3].

The lowest number of referrals to CRNP were from users with stroke, corroborating data from the study that points to the traumatic/orthopedic area as the main cause of requests for rehabilitation care[7]. On the contrary, other studies show that the main cause of requests was the neurological area, explained by the increase in cardiovascular diseases and the aging of the population[6, 15].

The DE: Musculoskeletal pain was present in almost all users referred to the CRNP, these findings are in line with what several authors argue when they point out musculoskeletal injuries as the most prevalent in terms of the need for rehabilitation, affecting 1.71 billion people in the world[3] and who consider musculoskeletal conditions to be the biggest cause of pain and functional limitation in the adult population[15,17]. Musculoskeletal pain affects the individual comprehensively, conditioning their physical, emotional, functional and social participation and integration, and can cause different degrees of disability, deteriorate quality of life and produce a high economic impact[17].

Among musculoskeletal disorders, low back pain is one of the most common[3] and in Portugal it has a prevalence of 26.4%[16] which was also confirmed in this study.

The percentage of users with pain reduced significantly from Phase 1 to Phase 2, which proves that the interventions carried out by SNRN had an effect, corroborating other studies that attest that the rehabilitation nursing program produced significant improvements in pain[8] and that rehabilitation led to a reduction in pain scores in the experimental group compared to the control group[18].

The ND: "impaired muscle movement" was quite frequent, confirming that the inclusion of practices aimed at muscle strengthening must be present in various conditions, such as pathologies of the musculoskeletal system, post-fracture situations or surgical procedures (total knee arthroplasty and others) and changes in the central nervous system such as stroke[19].

After carrying out rehabilitation nursing interventions, the percentage of users with DE: "impaired muscle movement" decreased and the average value of muscle strength increased considerably. These differences prove that rehabilitation had a significant effect on increasing the muscular strength of users, corroborating other studies that used muscle strengthening after fracture, after total knee arthroplasty, low back pain and stroke, and in all of these there was a gain in strength[18]. The impact of rehabilitation nursing care on muscle strengthening was positive, demonstrating gains in muscle strength[10] and thus confirming that rehabilitation has a beneficial role in improving muscle strength[19].

More than half of users showed a deficit in self-care, justifying that Nursing interventions must include self-care and anticipate the prevention of decline upon returning home. The individualization of care to the particularities and specific needs of each person, as well as the continuity of care in the transition from hospital to the community, continues to be a challenge for Nursing[17].

The significant improvements seen in self-care corroborate other studies that reveal that the rehabilitation nursing program provided significant improvements in users' dependence on self-care[6,8] and that the SNRN intervention brings specific gains in all self-care activities, contributing to improve autonomy in activities of daily living[6].

The interventions carried out by SNRN also had an effect on reducing users' dependence. These results corroborate several studies that demonstrate gains in users' functional independence with the

provision of rehabilitation care[7,9] leading to an increase in the total score on the Barthel Index[10].

CONCLUSION

Rehabilitation in the community is extremely important nowadays as it can contribute to expanding rehabilitation and ensuring that users' needs are met. SNRN takes a privileged position in implementing measures that encourage cultural change in what rehabilitation means in the community through evidence of the effect of its interventions.

CRNP proved to be capable of responding to users of various ages and in very varied clinical situations, having demonstrated that the rehabilitation interventions carried out by SNRNS produced significant effects in reducing musculoskeletal pain, increasing muscle strength and independence in self-care of users who participated in the project.

The main limitations of this study are the type of non-probability and convenience sampling and the lack of a control group. However, there are difficulties that are not easy to overcome in clinical contexts. It is therefore suggested that the research be replicated in other UCCs and further studies be carried out in this area.

Despite the limitations mentioned, the results obtained prove the positive effect of the interventions carried out by SNRN and the impact that a rehabilitation project can have on the community.

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ETHICAL DISCLOSURES

Contribution of the author(s):

Conceptualization: AMP, JP, MCC

Data curation: AMP, JP, JF

Formal analysis: AMP, JF

Investigation: AMP, JP

Methodology: AMP, JF

Project administration: AMP

Resources: AMP, MCC

Software: AMP, JF

Supervision: AMP, JF

Validation: AMP, JF

Visualization: AMP

Original draft writing: AMP

Writing - review and editing: AMP, JP, JF, MCC

All authors read and agreed to the published version of the manuscript.

Ethics Committee:

Study authorized by the Health Ethics Committee of ARS Centro (Process no. 134/2022).