

ITALIAN JOURNAL OF PHYSIOTHERAPY

OFFICIAL JOURNAL OF THE ITALIAN SOCIETY OF PHYSIOTHERAPY

VOLUME 4
NUMBER 1
MARCH 2014

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Printing: Edizioni Minerva Medica - Tipografia di Saluzzo - Corso IV Novembre 29-31 - 12037 Saluzzo (CN) (Italy) - Tel. +39 0175
24.94.05 - Fax +39 0175 24.94.07

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Quarterly publication. Authorisation of the Milan Court no. 140 of March 8, 2011. Entered in the national press register in accordance with art 11 of law 416 dated 5-8-1981 at number 00 148 vol. 2 sheet 377 on 18-08-1982

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The Italian Journal of Physiotherapy: what's up now?

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Challenge of evidence-based medicine to physiotherapists

M. BACCINI

Motion Analysis Lab, Azienda Sanitaria di Firenze, Florence, Italy

The editorials published on the Italian Journal of Physiotherapy have repeatedly underlined the need of adapting physiotherapists' clinical practice to the principles of evidence-based medicine (EBM). However, though EBM has been included among the greatest medical milestones,¹ it is still regarded suspiciously by many physiotherapists. Some worry that EBM dictates the treatments to be delivered despite differences among patients, but such a concern is unfounded. Actually, EBM is about basing clinical decisions on the best available evidence and integrating evidence from scientific research with clinical expertise and patients' values and circumstances. It is not about dictating clinicians' choices.²

A second concern relates to the only one type of study design that is considered to be most useful for evidence, *i.e.*, randomised clinical trials (RCTs). Since few therapies, if any, are equally effective in all patients, some contend that RCTs do not allow to draw conclusions about which patient's characteristics are associated with an improvement or a deterioration in performance, because these data are lost in the statistical group analysis. Ideally, if we want to know whether a specific intervention is effective in an individual patient, we would apply that intervention in that patient.³ There is some truth in this statement, since a number of factor can lead clinicians astray when trying to make inferences from results of clinical trials, which include natural history, placebo effects, therapeutic relationship and pa-

tient's motivation and expectations. A striking limitation of RCTs results, for example, is found in the "complex" old or very old patients, in whom cause-effect linkages can hardly be detected due to the interaction of comorbidities. Indeed, these patients are commonly excluded from such researches.⁴ Single-subject studies, which are popular in the fields of special education and counselling, address this concern and might be a feasible alternative. These practice-based and practitioner-oriented study designs are becoming increasingly widespread also in the rehabilitation field and might contribute to evidence, provided that strategies aimed at minimizing bias, like randomisation in the N of 1 RCT design,⁵ are adopted. Unfortunately, single-subject designs are weak as regards external validity but multiple and consistent replications - across individuals rather than across groups - increase generalisation of their results.⁶ Due to this limitation, RCTs are still undoubtedly the best studies for providing evidence of cause-and-effect relationships and supporting changes in clinical practice.

A third criticism underlines the distinction between statistical significance and clinical relevance. We do not need to know merely if the probability that an intervention does produce a positive effect is sufficiently high, we need also to know if the size of this effect is sufficient to change the patient's clinical condition. In this respect, however, the research has made much progress with the definition of the minimal detectable change (MDC) and of the minimal

clinical important difference (MCID) for measurement tools used to assess the outcomes and now near all high-quality published studies report the findings also with reference to those parameters.

The concern most frequently invoked toward EBM in physiotherapy, however, is that evidence is never enough. No doubt this criticism has some foundation. Indeed, most systematic reviews in the rehabilitation field conclude that the available evidence is insufficient to support or to refuse the intervention under investigation. Moreover, published trials in the field of physiotherapy often suffer from limitations than are not detected by methodological quality appraisal tools and depend on a misinterpretation of the intervention under investigation. For example, in a recent RCT investigating the effect of neurocognitive rehabilitation (NR), *i.e.* Perfetti's method, for upper limb recovery in post-stroke patients, no differences were found between the experimental and the control group.⁷ In this trial, however, a rigid distinction was made between interventions aimed at enhancing upper arm functional recovery and interventions aimed at improving gait-related activities, so that all participants received a similar treatment for gait and postural control regardless of group allocation. Considering the distinctive features of NR, the exercises carried out for gait training were likely conflicting with NR and could have conceivably dampened the results in the NR group. So we do not know whether actually NR was no more effective than the control treatment. The authors' response to this criticism⁸ was that gait training had been kept quite similar in the two groups, thus the positive or negative effect of this training would have been the same in both groups. Transferring this approach to pharmacological research, the method is equivalent to studying the effect of a drug when concurrently administering a different medication that

neutralises or even reverses the effect of the drug under investigation. Yet this study is scored 8/10 in the PEDro database, *i.e.*, it got virtually the maximum obtainable score.

The finding of similar misinterpretation is not uncommon in the literature on physiotherapy. In my opinion, the best way to limit this confounding findings is that physiotherapists themselves, and in particular physiotherapists that suggest or are followers of a specific therapeutic approach, address the question of giving an evidence-based foundation to their proposals. It is surprising that no important clinical trial have been promoted so far by the authors proposing the different Concepts widely used in rehabilitation. Nevertheless, this focus on research should go hand in hand with the physiotherapists' habit of systematically, routinely measuring the outcomes in their clinical practice, since measuring the outcome is the core of EBM.⁹

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Conflicts of interest.—The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

Corresponding author: M. Baccini, Motion Analysis Lab, Azienda Sanitaria di Firenze, Florence, Italy.
E-mail: marco.baccini@asf.toscana.it

Motivational factors for physiotherapy from the outpatient and inpatients' perspective: a hermeneutic interpretative study

A. M. L. RUCKER¹, J. BAIER¹, R. CLIJSEN^{2,3}, M. LANDENBERGER¹, G. AYERLE¹

¹Medical Faculty, Institute for Health Science and Evidence Based Nursing, Martin-Luther-University, Halle-Wittenberg, Germany; ²University of Applied Sciences and Arts of Southern Switzerland, Department of Health Sciences, Manno, Switzerland; ³Faculty of Physical Education and Physiotherapy, Vrije Universiteit Brussel, Brussels, Belgium

ABSTRACT

Aim. The aim of this study was to clarify motivating factors of outpatients (OPT) and inpatients (INPT) with musculoskeletal disorder to avail themselves of physiotherapy.

Methods. Multicenter based hermeneutic study using semistructured interviews on 12 OPT and 14 INPT and an inductive analysis.

Results. For outpatients 26 and for inpatients 25 motivational factors were identified and grouped in major categories. While the participative aspect dominates the motivation for inpatients the motives of outpatients are triggered by structural and functional reasons. In both cases essential impulses are mainly based on the quality of the patient-physiotherapist relationship, the focus on success, and perception of one's physical condition.

Conclusion. The multidimensionality of motivation factors could be confirmed. Therefore a broader basis of patients' motivation to avail themselves of physiotherapy could be established. The absence of the participative aspect in the outpatient group may hamper the motivation of outpatients, which should be taken into account by any future investigation. Also, the extent to which the system of the ICF is suitable to detect motivational needs has to be clarified in further research. The findings inform clinicians about motivational factors they may be able to actively enhance and to increase patients' adherence to the course of their physiotherapy. The study also provides insights for generating quantifying hypotheses which in turn may serve to guide intervention studies that aim at improving the effectiveness of physiotherapy. (*It J Physiotherapy* 2014;4:3-13)

KEY WORDS: Exercise - Physical therapy modalities - Inpatients - Outpatients - Qualitative research.

The aim of this study was to clarify motivating factors of outpatients (OPT) and inpatients (INPT) with musculoskeletal disorder to avail themselves of physiotherapy.

Materials and methods

Generalities on motivation in regard to physiotherapy

The effects of an increase in motivation for therapy possess a high value for the individual

healing process. However, supporting motivation concepts are rarely used in physiotherapy. This situation is partly based on an insufficient understanding of the physiotherapists concerning the patient's motivation. Therefore physiotherapists do not feel confident to assess the patients' motivation. MacLean *et al.*¹ discovered that a possible misinterpretation could have a counterproductive effect on the collaboration between patient and physiotherapist. According to Bollert *et al.*² the lack of confidence in their own assessment-ability might be based on

an inadequate psychological training and also indicates the lack of understanding of the multidimensional nature of motivation.³ As part of physiotherapy care and health promotion, therapy motivation of the patient is considered to be one of the key points which can often determine success or failure in the health-relevant behavior adaptation.⁴⁻⁶ Some studies even show that motivation for therapy is useful to predict the success in a medical rehabilitation.^{4, 7-9}

Theories on motivation

The literature describes a number of theoretical approaches that reflect the topic of motivation. Motivation is defined by Strasser and Nagl¹⁰ as a process or state by which an act is driven. There are various theoretical approaches: theories in which motivation is explained as a natural instinct, or drive, as well as a process of drive reduction.⁴ Other theories consider motivation as a means of incentives by neurobiological mechanisms or by reinforcement theories, which boost motivation by bio-feedback, or other means of positive feedback.^{4, 11} A close relation to neurophysiological and neuropsychological contexts has to be drawn here as well. As part of a target oriented activity, motivation is regarded as a phenomenon whose influencing factors can be psychological as well as physical and can have intrinsic and/or extrinsic driven motives which can be triggered by emotional as well as by purposeful motives.¹¹⁻¹⁵

Ongoing compliance and adherence research

An enhanced sense of self-responsibility of patients is part of an ongoing medical research.¹⁶ This was also recognized and picked up by the WHO in their Adherence to Long-term Therapies Project.¹⁷ Described by Sabaté *et al.*¹⁷ and Well,¹⁸ non-adherence contributes not only to increase medical expenses, but also burdens the economic resources. In consensus with the authors the Economist Intelligence Unit mentioned that an improved compliance and adherence by patients is one of the key factors, which adds to an improved health-economic

situation.¹⁹ This in turn requires a certain level of motivation from the patient and leads to a complex multidimensionality which is difficult to ascertain.^{15, 16, 19}

Ascertainment of motivation from the patient's perspective

A literature search was conducted using the electronic databases Medline and PEDro as well as by manual search. The inclusion criteria were: articles, which discuss, determine and/or assess motivational factors from the patient's perspective in the field of physiotherapy. Moreover, articles in English or German language were retrieved if they related in anyway to physiotherapy, motivation and the musculoskeletal system. A total of 39 relevant studies were included in the research status. The findings also contained questionnaires to assess patients' motivation. A number of instruments have been developed in the field of medical rehabilitation. So far it resulted in the development of FREM (FRemd Evaluation rehabilitation Motivation), an external assessment of the rehabilitative motivation⁸ and PAREMO (Patienten REhabilitation MOTivation), a motivational tool for self-assessment.⁹ The Situational Motivation Scale (SIMS) has been developed by Guay *et al.*²⁰ for the psychometric identification of intrinsic motivators and external regulation options.

To capture the self-motivation of their participants Brewer *et al.*²¹ used the Self-Motivation Inventory, the Social Support Inventory, Athletic Identity Measurement Scale, the Brief Symptom Inventory and the Sport Injury Rehabilitation Adherence Scale. Fischer and Corcoran²² refer in their books to a variety of questionnaires regarding motivation oriented key points. But the individual questionnaires show only very tangentially a direct relation to the patients' view or to the field of physiotherapy. One study describes categories to assist the motivational assessment specifically for elderly patients in physiotherapy and sports rehabilitation but does not address the subjective view of the patients.³ Facilitators and barriers to exercise behavior among people with osteoarthritis could

be defined in a qualitative study by Petursdottir *et al.*²³ Internal factors include individual attributes and personal experience of exercising, whereas external factors include the social and physical environment. The participants expressed how each of these internal and external factors could act both as a facilitator and a barrier to exercise participation and the pattern of exercising; for example, the presence of pain was an important aspect concerning internal barriers to exercising, whereas the hope of less pain was one of the main facilitators.²³

The International Classification of Functioning, Disability and Health (ICF) tries to capture motivation as an important personal resource.²⁴ There is general agreement among researchers that the existing multidimensionality of the subject motivation and its affecting factors are difficult to detect.^{3, 5} The missing transparency of reasons to avail of physiotherapy and of factors influencing therapy motivation represents a lack of knowledge on the side of the physiotherapist. For the purpose of shared decision making and optimising patient support, it is important to explore the understanding of patients' motives, needs and expectations from a more broadened viewing angle.

Choosing a suitable research method

The aim of this study was to determine influencing factors and to form categories that give a clear view on motivation for physiotherapy from the patient's perspective. In addition, it was of interest whether motivation profiles of outpatients and inpatients actually do differ. The approach via a qualitative study was seen as a suitable method for investigating meanings and achieving a contextual understanding of motivational factors from a patient's perspective. Finally being able to categorize and getting able giving motivation a more transparent appearance lead to the method of conducting a hermeneutic study. Following research questions were defined:

1. What are motivating factors for outpatients and inpatients with musculoskeletal disorders to avail themselves of physiotherapy?
2. Are there any differences in motivations between outpatients and inpatients?

Design

The above stated objective indicates a qualitative study design, specifically a hermeneutic interpretive approach investigating the patients' lived experience.²⁵⁻²⁸ In addition, it was of interest how the motivation of outpatients and inpatients differs qualitatively with regards to the specific context of physiotherapy provision. The study procedure is shown in Figure 1. In semi-structured face-to-face interviews, which were based on a set of guiding questions (which however served as a guideline to the interviewer, not as a questionnaire), 26 patients explained their views on their motivation to avail themselves of physiotherapy, the factors influencing their motivation (influencing factors), their expectations and desires relating to physiotherapy.²⁹ The interview guideline addressed unclear aspects of patients' motivations and influencing factors, *e.g.* barriers or else incitements such as expectations, or goal orientation. It was pilot-tested with four participants to test its feasibility and to become familiar with it. The interviews were conducted by two physiotherapists, each of whom interviewed all the OPTs or all the INPTs. The Ethics Committee of the Medical Faculty of the Martin-Luther-University Halle-Wittenberg approved this study. All participants gave written informed consent before data collection began.

Participants

For data collection 12 outpatient and 14 inpatient interviewees were drawn from four German institutions (two private physiotherapy clinics and two general hospitals). In order to include interview participants who were part of the usual population receiving physiotherapy and fairly typical for it,^{25, 26, 29, 30} the inclusion criteria were not restricted to a certain group of patients, other than patients had to be 18 years old with a diagnosed musculoskeletal problem. Strategic recruitment was used in order to gather a pragmatic sample number.³¹ At that point in time the patients were given written information about the qualitative research project and were asked to sign an informed consent

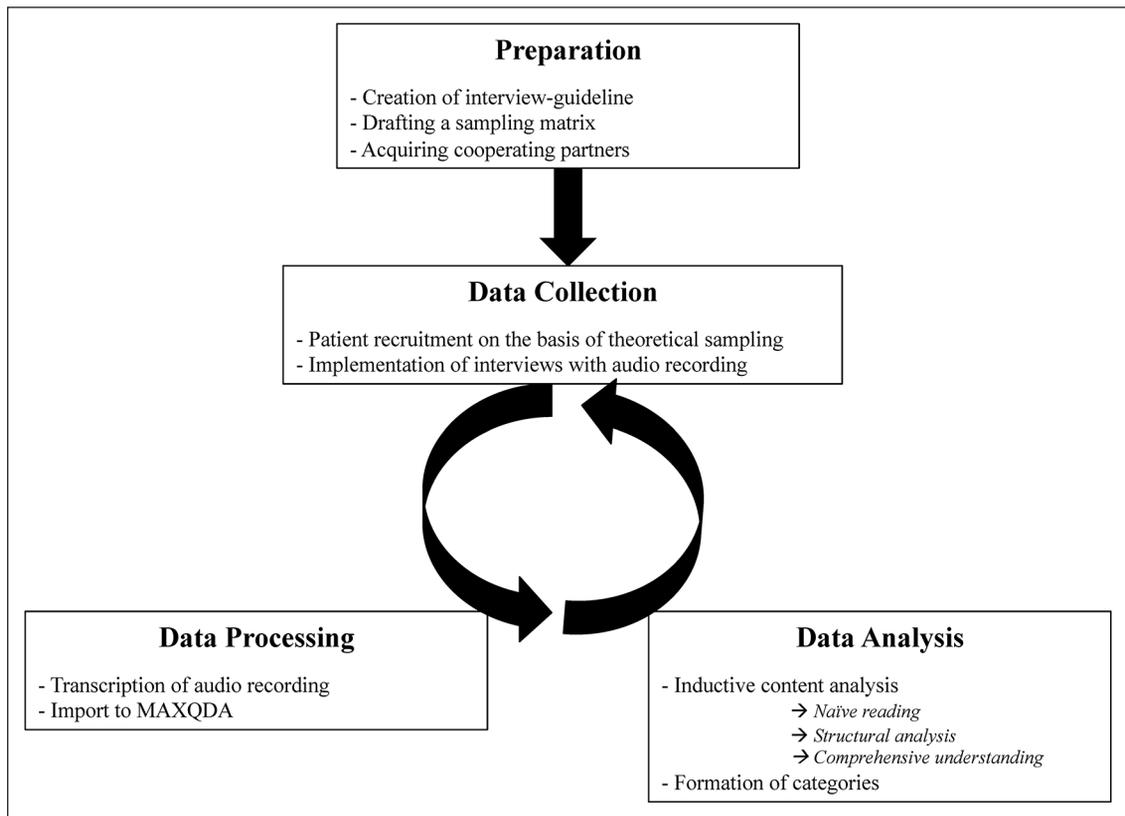


Figure 1.—Study phases.

form. Exclusion criteria were cognitive limitations that would have made communication difficult and meaningful responses improbable. Tables I and II show the characteristics of the interviewees.

Data analysis

The transcribed interviews were anonymised and subjected to an inductive content analysis that entailed several circular phases of viewing, condensing, interpreting, and abstracting core content from the relevant passages.²⁶ The circle of hermeneutical text interpretation^{27, 28} consists of three methodological steps: first step, the naïve reading which means reading the text several times to grasp its meaning as a whole; secondly, the structural analysis which entail the methodical instance of interpretation; and thirdly the comprehensive understanding.²⁸ The data analysis was supported by the crea-

tion of a coding system to transparently document the procedure. Thereby the selected and condensed interview passages were extracted and grouped by common features, which were identified as motives, motivation impulses and influencing factors. According to Mayring^{26, 30} the last step in the process of analysis is a critical review of all categories and codes developed. This means that in view of the original context of the interviews, the text passages assigned to the categories and codes were again checked with the aim of avoiding any misreading of passages and thereby to establish reliability of text interpretation. The steps of analysis and interpretation were conducted by three physiotherapists (one female, two male) who first separately distilled the core message from the data³² and in cases of deviations, interpretations were discussed by the researchers on the basis of data in order to reach a consensual understanding. Subsequently, the categories were

TABLE I.—*Basic data of outpatient interviewees and interview duration.*

Patient (Pseudonym) N.=12	Age (years)	Gender M=male F=female	Localisation of the musculoskeletal problem	Type of medical insurance	Employment	Duration of interview (min:s)
OPT01	43	M	Lower limb	Statutory	Laborer	15:10
OPT02	57	F	Torso + lower limb	Statutory	Office worker	14:15
OPT03	40	F	Torso	Statutory	Office worker	9:30
OPT04	61	M	Torso + upper limb	Private	Official	16:30
OPT05	26	F	Torso	Statutory	Office worker	17:15
OPT06	53	M	Lower limb	Private	Official	20:20
OPT07	31	M	Upper limb	Statutory	Laborer	10:50
OPT08	37	F	Lower limb	Statutory	Office worker	11:45
OPT09	61	F	Torso	Statutory	Pensioner	18:45
OPT10	66	M	Torso, upper + lower limb	Private	Pensioner	16:50
OPT11	23	M	Upper limb	Private	Office worker	8:00
OPT12	72	F	Lower limb	Statutory	Pensioner	17:40

TABLE II.—*Basic data of inpatient interviewees and interview duration.*

Patient (Pseudonym) N.=14	Age (years)	Gender M=male F=female	Localization of the musculoskeletal problem	Type of medical insurance	Employment	Duration of interview (min:s)
INPT01	47	M	Torso	Statutory	Office worker	20:02
INPT02	52	F	Upper limb	Statutory	Laborer	21:48
INPT03	72	F	Lower limb	Private	Pensioner	24:06
INPT04	79	M	Lower limb	Statutory	Pensioner	27:04
INPT05	55	M	Lower limb	Private	Self-employed	27:02
INPT06	74	F	Lower limb	Private	Pensioner	21:30
INPT07	61	F	Lower limb	Statutory	Pensioner	15:00
INPT08	70	M	Lower limb	Statutory	Self-employed	23:16
INPT09	23	M	Torso + lower limb	Statutory	Office worker	16:38
INPT10	53	F	Torso	Statutory	Laborer	22:18
INPT11	55	F	Upper limb	Statutory	Laborer	22:42
INPT12	52	F	Lower limb	Statutory	Housewife	26:12
INPT13	37	F	Torso	Statutory	Housewife	15:22
INPT14	24	F	Torso	Statutory	Office worker	15:20

checked in terms of their potential to answer the research questions.^{26-28, 30} The software MAXQDA was utilised for systemising and structuring the material.

Results

What are motivating factors for outpatients and inpatients with musculoskeletal disorders to avail themselves of physiotherapy?

The motivation factors for physiotherapy of OPTs and INPTs are represented at multiple levels. For 12 outpatients the hermeneutic interpretative analysis resulted in 26 categories and for 14 inpatients 25 categories could be generated

(Figures 2, 3). OPTs categories were condensed in ten while INPTs motivation factors could be merged into eight main categories (Figures 4, 5; in these graphics the software MAXQDA allegorises higher frequencies of related citations (codes) in larger rectangles for a better presentation – no quantifying conclusion is permitted). Most of the factors are similar. The patients named in both settings common attributes like physical well-being, a trustful patient-therapist relationship, and focus on success as important motivational requirements which will be closer specified in this article. Parallels can also be found in the areas of prior experience and psychosomatic aspects.

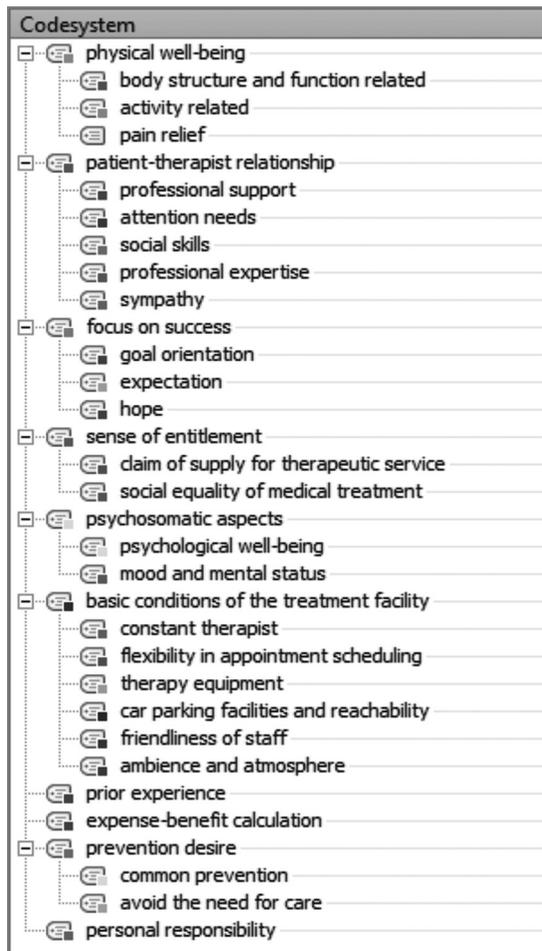


Figure 2.—Categories and assigned subcategories for OPT.

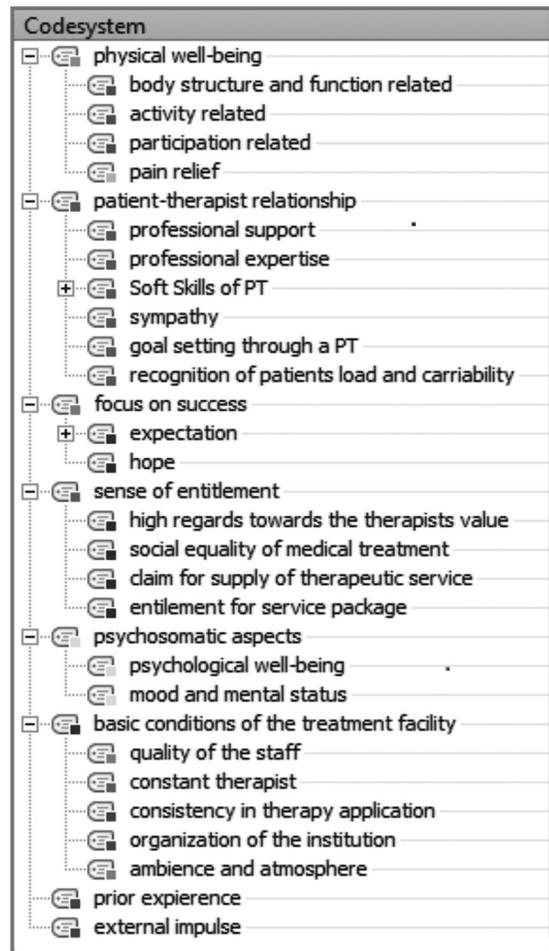


Figure 3.—Categories and assigned subcategories for INPT.

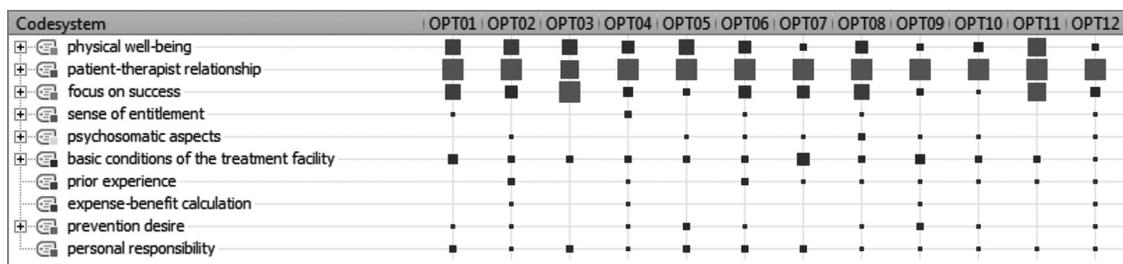


Figure 4.—Distribution of aspects mentioned in the main categories for outpatients (OPT).

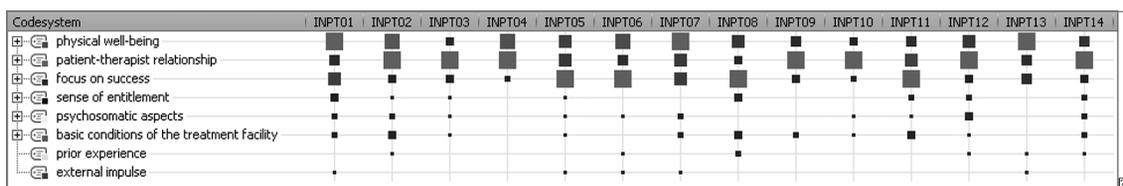


Figure 5.—Distribution of aspects mentioned in the main categories for inpatients (INPT).

PHYSICAL WELL-BEING

The interviewees stated that physical well-being is a triggering impulse for initiating physiotherapy. In some patients it may be reinforced by the prospect of receiving (passively) a soothing treatment, but also by the expectation of an improved health and bodily function.

"Well I think it's nice to have some time to lie on the bench and enjoy a massage!" (INPT12)

"I notice changes in my knee and on my mobility and that is important!" (OPT01)

The patients also stated motives, which focused on physical recovery and an increased mobility, which in turn facilitated a greater personal autonomy in their day-to-day lives. Some statements expressively emphasised a desire to improve the level of activity. The patients' objectives referred to an improved function of basic joint motions in all relevant directions as well as the physical ability to perform daily activities and to actively spend their leisure time.

"I was not able to climb up stairs. I could not go shopping. I always had to push a shopping cart for some support. And buying clothes..., that's why I came here!" (OPT02)

"My first goal was to comb my hair." (INPT02)

Many patients also indicated that pain had a motivational impact. They reported a desire for pain reduction which was generally linked with structural, functional or activity-related motivations.

"Whenever I have pain or other problems, if any vertebrae get jammed, I just wish that I get some help in therapy." (OPT05)

THE PATIENT-PHYSIOTHERAPIST-RELATIONSHIP

The sense of sympathy plays an influential role in the relationship between the patient and the responsible physiotherapist. In the interviews sympathy is often described by periphrasis, such as *"chemistry has to match"* or *"on the same wavelength"*. This intrinsically generated sensation may arise at first sight and affects the motivation for treatment.

"I think being a specialist is not all. There has to be sympathy as well." (OPT05)

"This is the first point: that the chemistry is right! And this was found immediately between my physi-

otherapist and me. Then you are willing to participate more actively." (INPT03)

Some interviewees explained their motivation as a driving force towards the fulfillment of their need for support and healing, which is expected amongst other things from the expertise of their physiotherapist.

"... that he will help me along the way and accompany me as an ally with his expertise, because I am no medical specialist." (INPT03)

"That's why we need an appropriate treatment by a specialist." (OPT01)

The respondents also saw a motivating effect deriving from the soft and social skills of the physiotherapist. Important characteristics mentioned were empathy and communication skills. Also the appearance of the physiotherapists was seen as important for a productive interaction between both sides and the building of trust.

"I will always try special exercises when the benefit is explained. But exercises where I know in advance that there is no benefit, or I am not given an explanation, I reject immediately." (OPT02)

"Kindness! A friendly, honest appearance without her being overweight. Because a physiotherapist should set a good example." (INPT10)

If the primary impulse is based on seeking indeterminate non-specific professional support, it may often be identified as need for attention. This feature encompasses characteristics of social consolation, human closeness or encouragement. In this case patients expect that a physiotherapist not only acts as a professional partner, but also bolsters them up.

FOCUS ON A SUCCESSFUL PHYSIOTHERAPY

Expectation is a motive, which is described in both settings by the interviewees in the context of focus on a successful physiotherapy outcome.

"Because I expect that physiotherapy is helping me to get back on my feet, that keeps me doing all this" (INPT09)

Hope also functions as another identifiable motivation factor in this main category. Sometimes these aspects form a subconscious thought by the patients. Therefore they are not easily identified by a third party as a motivational factor, but do function as such.

“What I hope for! Just healing as fast as possible and the best chance that all is well again afterwards.” (OPT08)

Are there any differences in motivation factors between outpatients and inpatients?

There were differences detected. In the main category physical well-being the effect that for INPT the participatory stimulus could be filtered, while this aspect was not mentioned once in the outpatient setting was a notable finding.

“With that pain I do not want to live anymore! I'm not able to do my job anymore. We'd like to continue our family planning soon, but that is not possible with my ongoing back pain.” (INPT14)

“I would love to be able to walk again next to my partner on the beach.” (INPT04)

Furthermore, the preventive thought does not matter for inpatients, but for outpatients appeared distinctively.

“Anything but nursing care! When I saw all the people in wheelchairs or with crutches in the hospital, I thought to myself: No, this is not what I want, that would kill me!” (OPT12)

Inpatients neither have given the reason for the need of the additional category of the motivating factor of personal responsibility, which occurred as a much more motivational aspect for outpatients. Counterpoints were also the two categories of expense-benefit-calculation and the influence from the outside (Figures 4, 5). While the expense-benefit-calculation was also not discussed by inpatients, the motivation may be spurred on by an external encouragement of the social environment.

“If I do pay for my treatment privately, I guess I do expect to perhaps have a better therapy, if I allowed to say so”. (OPT06)

The analysis also revealed that OPTs seem to be rather goal orientated in their view on their care.

“I want to move my arm again” (OPT04)

The OPTs seem to come up with their own objectives while the INPTs, based on a good patient-therapist relationship, are looking for their physiotherapist to determine the goals they are supposed to achieve. Therefore the assignment

to different categories was made and the distinction is shown in Tables I and II.

“It is important to me that my physiotherapist is setting achievable and tangible goals. This motivates me, especially if we are on the same wavelength!” (INPT04)

Discussion

The research aim was to gain a deeper insight from the patient's perspective in their motivation to participate in physiotherapy. For this purpose exclusively inpatients and outpatients with musculoskeletal disorders were interviewed with the aim of reaching valid results specifically for this population. Motivating factors for physiotherapy were categorized inductively from transcribed semi-structured interviews. Due to the practical implication of different care settings distinctions between inpatients and outpatients were analysed while at the same time commonalities were also explored. The role of the physiotherapist was focused on in more detail.

Many motivational factors known to date were confirmed from the patient's perspective. Parallels were observed with regard to the categories established by Grindley and Zizzi³ as well as by Petursdottir *et al.*,²³ especially in the patients' hope for less pain. This seems to be one of the main facilitators of motivation to undergo physiotherapy.

Based on the patients' narratives some aspects were found, that were not considered in previous lists of factors influencing patients' motivation. These include their “sense of entitlement”, their “expense-benefit analysis”, and “basic conditions” regarding the medical facility. Largely unnoticed so far were the aspects of the patients' success orientation and the patient-therapist relationship. Both seem to strongly influence motivation to undergo physiotherapy. Previous experience with physiotherapeutic exercises seems to be helpful in following through with physiotherapy, as Petursdottir *et al.*²³ had found in their study.

Analyzing the current interviews no evidence could be found, which indicated a secondary gain of illness, as is the case in the self-assessment tool PAREMO-20. However, it is conceiv-

able that patients were not aware of it, or did not want to reveal it, as this self-exposure might reflect negatively on them. Different from the previous pilot project by Rucker and Baier,¹⁵ some factors could be summarized as subcategories within higher level dimensions. In addition, a clearer delineation of subcategories regarding the patient-therapist relationship as well as the patients' success orientation was achieved, most likely due to more precise coding rules.

Comparing the factors influencing motivation, the most prominent difference was found in the motivation of the in-patients to whom personal attention, consolation, or encouragement in physiotherapy seemed important, which was not found in the narratives of patients treated in the ambulatory setting. One possible reason for this could be that the outpatients are not removed from their social environment, as the inpatients are, and that their affective needs are met by their social networks. Thus, the participatory level addressed by the ICF seems not to be applicable in the outpatient therapy setting. To what extent the system of the ICF is useful to reveal and/or assess the discovered motivational factors remains undissolved.

Methodologically the research aim was achieved by using a hermeneutic interpretive approach. In the analysis the complete text material was included and evaluated which precludes the omission of relevant content.²⁵ To what extent the presence of the interviewer might have had a compromising influence on the interviewees' responses cannot be reliably appraised.¹⁸

In order to achieve credibility and representability, the target group was interviewed in the context of their treatment environment.²⁹ It may be possible that only motivated and open-minded patients participated in an interview and/or provided confidential information. Consequently, characteristics of unmotivated behavior could not be identified.

The use of an interview guide turned out to be useful for presenting the same, or similar, stimulating questions. As was seen, individual situations of illness, rehabilitation and disease perception give rise to various motivations, which vary from person to person. For an in-depth understanding and categorization of the patients'

statements three evaluators were involved in the data analysis. This served to assure the highest possible representability of the patients' stated motives, as well as credibility of the interpretation and conclusions drawn.³² However, the question remains to what extent the wider emotional scope of expression could be detected in the audio recorded data and during the process of evaluation.

The inclusion of a female person during the entire process of analysis counteracted a possible gender-bias which is described by Eichler *et al.*³³ Due to the small number of participants, the presumed lack of data saturation may be considered a weakness as it must be assumed that a higher number of patients might have yielded still more, or other, motivational aspects. Yet, in this basic research, relevant motives by patients were identified from which hypotheses may be derived for future studies.²⁵

Some motivational aspects, such as pain relief, basic conditions of the treatment facility or expense-benefit calculation could be confirmed and even deepened by a more profound understanding of the patients' point of view.¹⁵ Still, it is unclear what relevance, or impact, the insurance status, the type of the patients' injury, or their socioeconomic status may have on their motivation to avail themselves of physiotherapy.

There is still a lack of clarity regarding the valence of individual motivation factors. Future investigations are also required to identify the scope of individual motivational levels of intrinsic or extrinsic motives as well as triggering or sustaining factors.

In contrast to previous research projects, this one interviewed specifically persons in the process of rehabilitation. In this regard the established categories seem to be clearly identified and practice-oriented. Therefore, the proximity to everyday reality in providing physiotherapeutic care is given. The comprehensive category structure and clearly delineated categories provide a sound future guidance to create an item pool of motivation factors specifically for inpatient or outpatient physiotherapy.

The implementation of motivation concepts in everyday clinical practice requires a critical transfer of the patients' motives, expectations

and needs generated in this study. In this process the physiotherapist needs to sort out those motives that he/she may be able to control and test them for sensitiveness to intervention. Among them, goal orientation, and more precisely shared goal agreements between patients and physiotherapists, promises to be an easy applicable and little time consuming task to support the patients' motivation for treatment.

The evaluation of the significance of various motivation factors needs to be investigated in further research. Thereby, both quantitative and qualitative methods should be applied with higher patient numbers in order to reveal a deeper and more comprehensive understanding. Also, it might be interesting to examine in future research projects whether gender and age have an impact on patients' motives since slight differences could be observed in this study.

Conclusions

The results of this study confirm that patients' motivation to avail themselves of physiotherapy is a multidimensional construct. The finding that a trustful patient-physiotherapist relationship is a strong motivational factor needs to be attended to, and strengthened in practice, in order to promote an effective therapeutic care, and to prevent drop-outs. Also, the fact that patients' physical well-being and their desire to be successful in their therapy are major motivational factors, calls on physiotherapists to focus more consciously on areas, or exercises, which promote well-being, and which give patients a sense of effectiveness early in the course of their care.

The study offers information for physiotherapists who are interested and willing to improve their awareness for, and understanding of, their patients' needs and motives. Thereby it makes a contribution to a more conscious and focused effectiveness and efficiency in physiotherapy. Both the affected persons as well as the financing health insurances could benefit from the insights offered. For the purposes of furthering the professionalization of physiotherapy this study represents a meaningful step towards an enhanced evidence-based practice.

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The authors confirm that all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story. No existing conflict of interests.

Received on September 25, 2013 - Accepted for publication on April 7, 2014.

Corresponding author: A. M. L. Rucker, Medical Faculty, Institute for Health Science and Evidence Based Nursing, Martin-Luther-University, Halle-Wittenberg, Bergstraße 5, 93107 Thalmassing, Germany. E-mail: a.rucker@doepfer-schulen.de

Domiciliary physiotherapy in women undergoing treatment for breast cancer radiation: a controlled randomized trial

N. F. BRAZ DA SILVA LEAL ¹, H. F. DE OLIVEIRA ², H. H. ANGOTTI CARRARA ²

¹Department of Obstetrics and Gynecology, School of Medicine of Ribeirão Preto, University of São Paulo, SP, Brazil;

²Department of Medical Clinic, School of Medicine of Ribeirão Preto, University of São Paulo, SP, Brazil

ABSTRACT

Aim. Objective of the study was to evaluate the effect of domiciliary physiotherapy on the upper limb applied during the period of radiotherapy in women submitted to surgery and radiotherapy (RT) for breast cancer.

Methods. This was a prospective randomized controlled clinical trial. Thirty-six volunteers were recruited from November 2009 to March 2012 and were appraised at three different times: pre-RT, post-RT and 2 months after the end of RT. The parameters evaluated were: shoulder range of movement (ROM) and arm circumference. The subjects were divided into two groups: control group (CG) submitted only to the assessments and study group (SG), submitted to domiciliary physiotherapy.

Results. In both groups there was a significant difference between ipsilateral and contralateral limbs for flexion, abduction and external rotation at all assessments; differences were also found in SG women for adduction at the third evaluation and in CG woman for extension at the second assessment. The ANOVA with repeated measures showed no significant effect of time of assessment nor significant time x group interaction for both goniometry and perimetry measures.

Conclusion. The home physical therapy protocol reported in this article had low adherence and was not effective in recovering shoulder ROM deficit. (*It J Physiotherapy* 2014;4:14-22)

KEY WORDS: Breast neoplasms - Radiotherapy - Physical therapy modalities - Upper extremity.

Breast cancer is second in prevalence in the world, being the most common type of cancer among women. It is a multifactorial disease influenced by hormonal factors and lifestyle behaviors. Patient treatment is based on local and systemic control of the disease. Local treatment is performed with the patient's submission to the surgical procedure and radiotherapy (RT), whereas systemic treatment includes chemotherapy (CT) hormone therapy (HT), and biological therapy.¹⁻⁴

RT represents an important tool for the reduction of the risk of local disease recurrence. Along with conservative surgery, it is the stand-

ard treatment for the disease in early stages (0 to IIB), but can also be associated with radical surgery and palliative treatment.^{5, 6} RT destroys cancer cells, also reaching normal tissues in the irradiated volume.⁷ This fact can make women receiving RT for breast cancer more prone to developing lymphedema, impaired shoulder mobility, fibrosis, pain, stiffness, and fatigue. The emergence and gravity of these morbidities are dependent on total and per fraction dose, body region irradiated and individual (personal) patient response.⁸⁻¹¹

Physical therapy intervention plays an important role in rehabilitation after breast cancer

treatment, and has been responsible for reducing pain, fatigue and lymphedema, also improving muscle strength (MS), range of motion (ROM) of the shoulder, functional activity and quality of life (QOL).¹²⁻¹⁵

Studies have shown that physiotherapy exercises applied during radiation treatment prevent the limitation of shoulder ROM, minimize the incidence of scarring and improve QOL in women treated for breast cancer.¹⁶⁻¹⁸

Although the benefits of a supervised exercise program during treatment for breast cancer are well known, the socioeconomic characteristics of the Brazilian population and the side effects of anticancer treatment are among the factors limiting attendance at outpatient physiotherapy sessions.¹⁴ Thus, in view of the serious consequences related to RT and the lack of studies on the subject, the primary objective of the present study was to evaluate the effect of domiciliary exercises, performed during the period of RT, on the shoulder and in the ROM, as well in upper limb perimetry, in women who had undergone surgical and radiation treatment for breast cancer. The assessment of adherence to domiciliary exercises was the secondary objective.

Materials and methods

Sample characteristics

The study was approved by the Research Ethics Committee of Hospital das Clínicas, Faculty of Medicine of Ribeirão Preto, University of São Paulo (HCFMRP-USP), protocol number 11678/2009.

This was a prospective randomized, not blinded, controlled clinical trial. Thirty-six volunteers were recruited (Figure 1). They all attended the outpatient Radiotherapy Clinic of the Breast Division of HCFMRP-USP, from November 2009 to March 2012. To be recruited, the volunteers should meet the following inclusion criteria: having been diagnosed with unilateral breast cancer and having been submitted to surgical and radiation treatment as part of the treatment for breast cancer, according to the therapeutic protocol of the unit. Exclusion criteria were as follows: patients with neurological or orthoped-

ic diseases that could impair the movements of the upper limbs, bilateral breast cancer, previous thoracic radiotherapy, and the presence of distant metastasis.

All the participants enrolled in the study were consecutive patients to whom radiotherapy was indicated as part of their treatment. Those who met the inclusion criteria and agreed to participate in the study were enrolled and signed an informed consent form prior to the study. All participants were housewives and none of them were involved in routine physical exercises with fitness objective before or at the beginning of the study. The only medication regularly prescribed by doctors of the Breast Division, and therefore that could be controlled, was tamoxifen for hormone-responsive tumors. No painkiller medication was prescribed, but the patients occasionally used it on their own.

Evaluation protocol and physiotherapeutic intervention

The volunteers were evaluated at three distinct times: pre-RT (first evaluation), post-RT (second evaluation) and 2 months after the end of RT (third evaluation). The following parameters were evaluated: ROM of shoulder joint and upper limb perimetry. To assess shoulder ROM, the movements of flexion, extension, abduction, adduction, internal rotation and external rotation were measured, with each movement being actively performed by volunteers. The measurements were done using a Carci® goniometer, which is a validated instrument for these measurements.¹⁹

The perimetry measurements were made at 6 different points: point A - metacarpophalangeal joint of the 2nd, 3rd, 4th and 5th fingers; point B - an imaginary line passing through the metacarpophalangeal joint of the thumb; point C - 10 cm below the olecranon; point D - 6 cm below the olecranon; point E - 6 cm above the olecranon; point F - 10 cm above the olecranon.²⁰ The volunteer should be sitting, with her arm resting on her thigh and the forearm supinated. The measurements of shoulder ROM and perimetry were bilateral and carried out by the same observer.

The volunteers were randomly divided into 2 groups: a control group (CG) subjected only to evaluations and to no exercise, and a study group (SG) instructed to perform domiciliary exercises for the upper limbs. The plan randomization was performed by a computer program that generated a list with the allotment of cases to the two groups. The allocation was randomized, but not concealed.

The exercises should be done with both upper limbs, twice a week, during the period of RT delivery and the exercises were carried out according to a proposed protocol,²¹ modified by our group. This exercise protocol consisted of 14 active free exercises for the cervical spine and upper limbs, being composed of a series of fifteen repetitions each, and was held in the sitting position as stated before. The exercises involved cervical elevation and rotation, flexion, extension, abduction, adduction and rotation of the shoulder, and also flexion and extension of the elbow and wrist.

In assessment 1, the volunteers were given a handout with illustrations of exercises to be performed at home. They were also instructed individually on how to do them, on the number of exercise sets and also regarding how many repetitions of each should be done. The entire educational intervention was the responsibility of the same researcher at all times (NFBSL). Along the duration of the study, telephone contact was made to reinforce the importance the exercises.

To check the adherence to home intervention, each volunteer in the SG received a worksheet to record the days the exercises were done during the period of RT delivery. The volunteers were instructed to return the worksheet on the occasion of the second evaluation.

All stages of the study, including recruitment of volunteers, invitation to participate in the study, randomization, evaluations and guidance to perform the exercises were conducted by the same researcher (NFBSL).

Sample calculation and statistical analysis

Sample size was calculated to obtain 80% power to detect a 3 cm difference in mean upper-

limb perimetry after intervention, using a critical level of significance of 0.05. It was assumed that the standard deviation of the observations in each group was the same. A sample size of 32 participants was required (16 participants in each arm). The Power and Sample Size Calculation software, version 2.1.31, was used for the calculations.²²

The analysis was performed by intention-to-treat (ITT). This kind of analysis includes all participants in the group that were allocated by randomization, regardless of whether the individuals began treatment, did not join the protocol proposed or received a treatment differing from the original one.²³ The paired *t*-test was used to compare goniometry measures between limbs within the same evaluation, whereas the unpaired *t*-test was used for ipsilateral limb intergroup comparison as well as for intergroup perimetry comparison. Moreover the ANOVA with repeated measures with one within-subjects factor (time) and one between-subjects factor (group) was used for both goniometry and circumference measures. The analysis was performed using the GraphPad Prism Software version 5.00, 2007 and MedCalc Statistical Software version 13.1.0.0.

Results

The inclusion, allocation, monitoring and analysis plans for the selected volunteers are shown in Figure 1.

Table I presents the epidemiologic characteristics of the volunteers, with descriptive statistics and analytical data. Table II presents the grouping by stage according to the TNM classification.

The radiation treatment followed the current protocol of the service. The irradiated areas were breast or chest wall in all 36 volunteers and the supraclavicular fossa (SCF) was also irradiated in 7 women in the CG and in 8 in the SG. The treatment was scheduled to deliver 1.8 to 2.0 Gy daily, 5 days a week, with a total treatment dose of 45 to 50.4 Gy. As reinforcement, 10 Gy was delivered to the tumor bed in 5 fractions, involving only the target volume or the tumor quadrant. The duration of RT was 5 weeks for

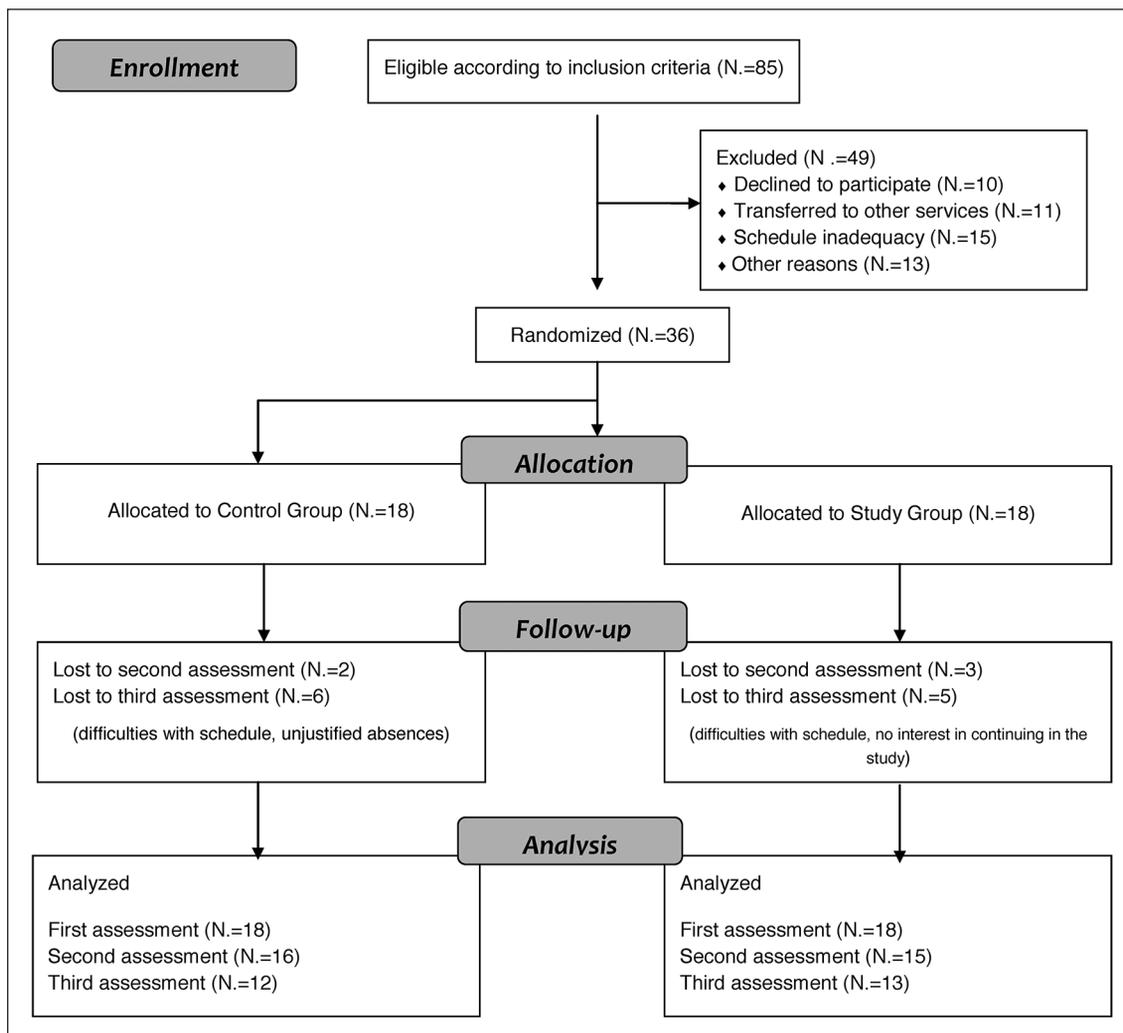


Figure 1.—Flow diagram.

both groups. For volunteers who received reinforcement in the tumor bed, the RT lasted 6 weeks.

A total of 18 volunteers in the CG performed assessment 1, 16 performed assessment 2 and 12 performed assessment 3. In the SG, 18 volunteers performed assessment 1, 15 performed assessment 2 and 13 performed assessment 3.

Table III shows the data of ipsilateral and contralateral goniometry of the SG and CG. In the SG, when comparing the ipsi- and contralateral upperlimbs, a deficit was observed for the movements of flexion, abduction and external rotation in assessment 1. The same movements remained impaired over assessments 2 and 3. A

deficit for the adduction movement was also noticed in assessment 3. The CG presented deficit between the limbs for the movement of flexion, abduction and external rotation in assessments 1, 2 and 3, and also for extension in assessment 2.

In the intergroup comparison analysis, there was no significant difference in the homolateral upper limb in terms of goniometry.

Table IV presents data for intragroup and intergroup perimetry analyses. No significant difference was found in the CG or SG regarding perimetry when the point-to-point measure was taken at the three different evaluations. The perimetry also showed no significant difference

TABLE I.—Characteristics of the volunteers.

	CG (N.=18)	SG (N.=18)	P value
Age, years (mean±SD)	54.89±11.86	52.00±12.12	0.47
Body Mass, kg (mean±SD)	72.97±18.24	74.77±18.17	0.77
Surgery type (number)			
Conservative	13	14	
Radical	4	4	
Axillarysurgery	11	11	
Sentinel lymph node biopsy	7	5	
Reconstructive surgery	2	2	
Radiotherapy delay post-surgery, months (mean±SD)	4.64±2.83	4.22±2.73	0.66
Systemic therapy (number)			
CT	15	14	
HT	13	16	
Stage (number)			
0	1	3	
I	3	2	
IIA	4	7	
IIB	4	2	
IIIA	2	1	
IIIB	4	3	
IIIC	-	-	
IV	-	-	

CT: chemotherapy; HT: hormone therapy.

TABLE II.—Anatomic stages: breast TNM classification.³²

Stage	0	I	IIA	IIB	IIIA	IIIB	IIIC	IV
TNM classification	Tis N0M0	T1N0M0	T0N1M0	T2N1M0	T0N2M0	T4N0M0	Any T N3M0	Any T Any N M1
			T1N1M0	T3N0M0	T1N2M0	T4N1M0		
			T2N0M0		T2N2M0	T4N2M0		
					T3N1M0			
					T3N2M0			

T: tumor; TX: tumor cannot be assessed; Tis: carcinoma *in situ*; T0: no evidence of primary tumor; T1: tumors ≤2 cm in greatest dimension; T2: tumor > 2 cm but ≤5 cm in greatest dimension; T3: tumor >5 cm in greatest dimension; T4: tumor of any size with direct extension to chest wall and/or to the skin; N: regional lymph nodes; NX: regional lymph nodes cannot be assessed; N0: no regional lymph node metastases; N1: metastases to movable ipsilateral level I, II lymph nodes; N2: metastases to ipsilateral level I, II axillary lymph nodes that are clinically fixed or matted; or in clinically detected ipsilateral internal mammary nodes in the absence of clinically evident axillary lymph node metastases; N3: metastases in ipsilateral infraclavicular (level III axillary) lymph nodes with or without level I, II axillary lymph node involvement; or in clinically detected ipsilateral internal mammary lymph nodes with clinically evident level I, II axillary lymph node metastases; or metastases in an ipsilateral supraclavicular lymph node, with or without axillary or internal mammary lymph node involvement. M: distant metastases; M0: no distant metastases; M1: distant metastases present.

between groups in any of the reviews. The analysis of the factors “time” and “group” showed no significant difference for goniometry or for perimeter nor significant time x group interactions. Of the 15 volunteers subjected to assessment 2, only 4 returned the exercise frequency chart properly completed. Of these 4, three stopped doing the exercises in the last few days of RT due to injury to the irradiated site. Four volunteers filled out the chart incorrectly, six patients did not return the chart and one reported she

did not perform the exercises at home. On this basis, the adherence to domiciliary kinesiotherapy based on the frequency charts showed that 53.3% of the volunteers were adherent to domiciliary exercises.

Discussion

The present study aimed to assess the physical changes in women subjected to RT for breast cancer by goniometry of shoulder ROM and

TABLE III.—Active range of motion in omolateral and contralateral limbs measured at baseline (T1), end of intervention (T2) and follow-up (T3) (mean±SD, data in degrees).

	Study Group (SG)			Control Group (CG)			IL SG vs CG
	IL	CL	p	IL	CL	p	P
Flex_T1	146.4±10.0	155.6±6.4	<0.05	134.0±26.2	148.3±14.6	<0.05	0.07
Flex_T2	143.5±9.2	153.9±6.7	<0.01	139.1±18.1	150.8±14.1	<0.01	0.40
Flex_T3	139.0±13.6	149.9±7.6	<0.01	139.4±15.6	149.2±13.3	<0.05	0.94
Ext_T1	42.0±8.3	43.2±7.0	0.36	41.78±9.1	43.3±9.0	0.30	0.94
Ext_T2	40.5±7.9	42.6±8.2	0.32	37.9±41.8	41.8±8.0	<0.01	0.39
Ext_T3	39.0±6.5	41.9±3.8	0.18	39.3±8.1	40.3±7.0	0.52	0.93
Abd_T1	141.2±15.7	157.6±10.9	<0.01	127.9±31.0	146.1±22.8	<0.01	0.11
Abd_T2	140.1±18.1	153.3±10.2	<0.01	132.9±21.8	146.6±20.3	<0.05	0.33
Abd_T3	138.1±18.0	151.5±8.5	<0.05	133.0±20.5	149.1±17.9	<0.05	0.52
Add_T1	28.9±7.5	31.4±6.2	0.20	29.4±13.9	32.8±7.6	0.29	0.88
Add_T2	29.2±12.8	32.13±9.3	0.30	25.81±9.4	31.3±8.6	0.06	0.40
Add_T3	29.08±9.21	35.8±7.27	<0.05	28.8±8.5	33.3±10.0	0.07	0.93
ExtRot_T1	72.8±15.3	83.3±7.6	<0.05	73.0±14.4	81.1±7.4	<0.05	0.97
ExtRot_T2	73.1±13.7	82.5±6.2	<0.05	72.9±13.0	82.1±9.3	<0.05	0.97
ExtRot_T3	70.2±13.0	84.8±8.8	<0.01	70.8±15.4	83.4±9.2	<0.05	0.92
IntRot_T1	74.1±10.2	73.9±9.6	0.91	74.3±12.1	72.9±12.2	0.51	0.94
IntRot_T2	73.7±7.5	75.9±9.7	0.49	77.1±9.1	75.1±9.4	0.38	0.28
IntRot_T3	72.9±11.7	74.3±8.8	0.68	75.9±7.4	76.3±8.4	0.83	0.46

IL: ipsilateral limb; CL: contralateral limb; Flex: flexion; Ext: extension; Abd: abduction; Add: adduction; ExtRot: external rotation; IntRot: internal rotation.

TABLE IV.—Difference in circumference between ipsilateral and contralateral limb measured at baseline (T1), end of intervention (T2) and follow-up (T3) (mean±SD, data in centimeters).

		T1	T2	T3	P value*
Point A	Study Group	-0.05±0.70	-0.23±0.53	-0.15±0.52	0.64
	Control Group	0.03±0.65	0.20±0.75	0.29±0.62	0.67
	P value#	0.72	0.08	0.06	
Point B	Study Group	0.14±0.55	0.30±1.25	-0.15±0.59	0.40
	Control Group	-0.19±0.84	0.10±0.63	0.29±0.75	0.38
	P value#	0.17	0.58	0.11	
Point C	Study Group	0.19±0.71	0.06±1.01	0.00±0.71	0.75
	Control Group	-0.17±0.94	-0.03±1.38	0.25±1.27	0.50
	P value#	0.20	0.82	0.54	
Point D	Study Group	0.11±0.70	0.13±0.91	0.08±0.76	0.98
	Control Group	-0.03±0.88	-0.03±1.04	0.17±1.09	0.89
	P value#	0.60	0.65	0.80	
Point E	Study Group	0.92±2.04	0.90±1.57	0.23±0.88	0.46
	Control Group	0.36±1.03	0.13±1.23	0.08±1.29	0.78
	P value#	0.31	0.15	0.74	
Point F	Study Group	0.36±1.17	0.66±1.40	0.04±0.85	0.40
	Control Group	0.17±1.40	0.20±1.31	-0.21±1.17	0.64
	P value#	0.65	0.35	0.55	

* within group comparison; # between groups comparison.

upper limb perimetry. This is understandable because breast RT is frequently blamed as causing upper limb lymph edema, impairment of shoulder ROM and fibrosis.²⁴⁻²⁶

The evaluation of other parameters such as quality of life, pain, function, depression and anxiety, although very important issues for women with breast cancer, was not the objective of this study. Other studies by our group have addressed these parameters and, to our knowledge, this is the first study to evaluate home exercises for the upper limbs during radiotherapy.

The occurrence of postoperative complications depends, among other factors, on the surgical extension, surgical axillary approach, and application of CT and RT. Conservative surgeries are associated with lower rates of lymphedema, rigidity and limitation of ROM and increased functionality of the ipsilateral upper limb when compared to radical surgeries.^{5, 11, 15, 26} Regarding axillary surgery, it is known that lymphedema, muscle weakness, pain and shoulder limitation are more frequent in women subjected to axillary lymph node clearing than in women subjected only to sentinel lymph node dissection.^{15, 27-29}

The ipsilateral limb ROM impairment of SG persisted throughout the RT and up to 2 months after the end of treatment compared to the contralateral limb. It is important to emphasize that the achievement of the objectives of a rehabilitation program requires patient compliance with treatment, with only 53.3% of the SG patients studied here adhering to it. This can justify the persistent ROM deficit observed during the period analyzed. CG subjects also kept the ROM deficit of the flexion, abduction and external rotation, movements throughout the three evaluations. This is in accordance with some studies that applied physical therapy during the period of RT, which also showed an increased ROM deficit in some movements among control subjects.^{16, 17}

Impairment of the movements of flexion, abduction and external rotation was found compared to the contralateral limbs. For the shoulder joint to keep its normal movement the muscle needs to be long and to have enough

sliding under the adjacent soft tissue (skin and subcutaneous tissue). For complete amplitude, the movements of flexion and abduction require proper functioning of major and minor pectoral muscles, latissimus dorsi, teres major, subscapularis and rhomboid. Normal action of the serratus anterior is also needed for scapular upward rotation. For the external rotation, the pectoralis major, latissimus dorsi, teres major and subscapularis need to be long and normal sliding.³⁰ Due to their origin and insertion, pectoral and serratus anterior muscles may be manipulated and may be damaged to some extent during surgery for breast cancer. In addition, they are located in the fields demarcated for the radiation treatment.⁷ Therefore, movements that require their performance can be affected by fibrosis and adhesion caused by these treatments.^{13, 14, 16, 17, 30}

Considering the average perimetry values, the subjects did not present postsurgical lymphedema, nor did they develop it during RT or even at 2 months after its completion. A similar result was reported by Oliveira (2008)¹⁷ who found no lymphedema 6 months after the end of RT. It is important to note that the period for the installation of lymphedema is variable, with the condition possibly arising soon after surgery or months or even years after treatment.³¹

Concerning intergroup comparisons and the comparison of the factors "time" and "group" together, there was no significant difference for goniometry or for perimetry in any of the evaluations. This shows that the volunteers presented measurements of shoulder ROM and perimetry similar to those preceding the RT period, and that the parameters evaluated were not influenced by RT or by the exercise protocol applied.

So far there is no definition of the best type, number and frequency of exercises that women treated for breast cancer should perform, or of the time when the exercises should start and how long they should be performed.¹⁵ The present study opted for free active exercises performed twice a week at home, with the intention of preventing or recovering physical impairment of the upper limb related to RT and to encourage subject adherence to physical therapy treatment. However, domiciliary unsupervised exercise was

found not to be beneficial for the recovery of the observed deficit of shoulder ROM between the ipsilateral and contralateral limbs.

The study presents limitations: it was not blinded to the researcher and withdrawal of volunteers throughout the study was high. All phases of the study were performed by a single physical therapist, *i.e.*, the selection of the volunteers, the invitation to take part in the study, group randomization, instruction on exercises and assessments 1, 2 and 3 were assigned to the same professional and, therefore, blinding was not possible. Difficulties in reconciling time, personal problems, travel, unexcused absences and withdrawal during the research were some of the reasons for failure in the follow-up of the volunteers and this is an important limitation of the study. Furthermore, breast cancer treatment is long and exhausting, both physically and emotionally, and may justify absences and loss of interest in continuing to participate in the research.

Conclusions

The home physical therapy protocol reported in this article had low adherence and was not effective in recovering the shoulder ROM deficit observed between the ipsilateral and contralateral limbs of women treated with surgery and RT for breast cancer. The parameters evaluated were not influenced by RT or by the exercise protocol applied. New studies should be carried out with supervised physical therapy in women during RT, since upper limb impairment was detected throughout the period of this adjuvant therapy. Other exercise protocols could also be studied.

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Conflicts of interest.—The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

Received on November 21, 2013. - Accepted for publication on April 28, 2014.

Corresponding author: N. F. Braz da Silva Leal, 3900, Bandeirantes Av., Ribeirão Preto, SP Brazil. E-mail: nanda.taz@bol.com.br

Growing older with cerebral palsy: a qualitative study

V. PALMA¹, L. MACCHI², M. ARMELLINI³, E. MOSSELLO¹
A. T. ROBERTS¹, N. MARCHIONNI¹, M. DI BARI¹

¹Department of Experimental and Clinical Medicine, Research Unit of Medicine of Aging, University of Florence, Florence, Italy; ²Unit of Functional Rehabilitation, Azienda Ospedaliero-Universitaria Careggi, Florence, Italy; ³Unit of Children Neuropsychiatry and Mental Health, Azienda USL 4, Prato, Italy

ABSTRACT

Aim. Patients with cerebral palsy (CP) nowadays reach adulthood, often developing additional muscle-skeletal or neurologic problems, which limit their functional autonomy. Aim of this study was to describe rehabilitation needs of adult patients with CP, to compare these needs with resources available, and to propose innovative strategies to improve services.

Methods. We conducted three semi-structured focus groups (FGs), a qualitative research method. Eight participants were in the parents/caregivers' FG, assisting adult children with CP. Five participants were in the adult patients with CP FG, all cognitively intact. Six participants were in the physiotherapists FG, working with patients with CP.

Results. The following issues arose: need for an individualized approach to rehabilitation; problems with the provision and maintenance of assistive devices; lack of specific programs for patients with CP as they grow older; poor expertise of healthcare professionals in this area. Participants suggested creating multidisciplinary teams of competent professionals, coordinated by a case manager, to optimize patients' wellbeing and resource utilization through periodic checks on health and assistive devices.

Conclusion. In this qualitative study, problems were identified and solutions proposed to improve rehabilitation and care of adult patients with CP. Interest for CP should not be restricted to professionals in the pediatric field, but rather extend to providers caring for young and middle-aged adults. (*It J Physiotherapy* 2014;4:23-30)

KEY WORDS: Cerebral palsy - Rehabilitation - Health services.

Cerebral palsy (CP) is usually considered a pediatric disorder: however, mortality of patients with CP has dramatically decreased and 50-90% of those reaching one year of age survive till adulthood.¹ Survival in the milder forms is similar to that of unaffected subjects, but prognosis has improved for adults with severe forms.¹ As incidence remained stable (around 2-3/1000 live births in the last decades^{2,3}) this prolonged survival translates into an increased prevalence.^{4,5}

Age-related changes in functional status appear earlier in adults with CP compared to unaffected individuals. No studies have followed children with CP prospectively, but retrospective

analyses of adults with CP show that motor skills progressively decline and gait becomes severely impaired in the second decade in most initially ambulatory patients.⁶⁻¹² In a sample of 56 adults with bilateral spastic CP, difficulties with mobility, recreation, and housing were extremely common, and many patients also had difficulty with personal care and employment.¹³ Factors involved in functional decline include inactive lifestyle, lack of physical exercise, and poor availability of, or limited access to, motor activity programs specifically designed for patients with CP beyond pediatric age.^{6,14} On the basis of the aforementioned epidemiological trends and the natural history of the condition, the burden im-

posed to adult healthcare services by disability due to CP is predicted to increase,¹⁵ also because no evidence-based strategies exist to prevent functional decline in CP patients as they grow older.¹⁶ Healthcare professionals and decision-makers in many countries appear to be aware of this scenario, as shown by recent reports from Australia,^{17, 18} the Netherlands¹⁹ and Sweden.¹² The problem has already been described in Italy, and a study on 72 adult patients with CP from three rehabilitation units in Bologna, Padua, and Rovigo was published more than a decade ago by Bottos *et al.*⁸ Paradoxically, as general motor performance deteriorates and independence is progressively lost with advancing age, contact with healthcare and rehabilitation services decreases radically on reaching adulthood. Based on these observations, authors suggested that pediatric neurorehabilitation should modify its approach to children with CP, but they did not address the issue of a possible involvement of adult rehabilitation services in the care of these patients once they grow older. To our knowledge no other Italian studies on the implications of prolonged survival of patients with CP on healthcare and rehabilitation services has been published since. Finally, the study by Bottos *et al.*⁸ had a very narrow focus and did not take into account the different perspectives of patients, families and professionals.

Aim of this study was to describe rehabilitation needs of adult patients with CP, to compare these needs with resources available, and to propose innovative strategies to improve services. We chose a qualitative research approach, to better represent the breadth and the width of individual experiences, relative to patients, families, and professionals, with the condition under investigation.

Materials and methods

Study design

We used focus group (FG), a qualitative research method consisting in group interviews where, under the guide of a moderator, participants report their experiences and express their ideas spontaneously and interactively.²⁰ This

approach has been used in previous studies on rehabilitation,²¹ often with the aim to describe meaning and significance of individual experiences. In doing this, we followed the COREQ checklist.²²

Participants

According to a purposive sampling strategy, three semi-structured FG were conducted, respectively involving parents/caregivers of adult patients with CP, adults with CP, and physiotherapists with specific expertise in the care of patients with CP. Physiotherapists were selected among those employed in community-based rehabilitation services dedicated to patients with CP, and they suggested names of potential participants to the parents/caregivers and patients FGs. The only inclusion criterion for the parents/caregivers FG was having a child, aged 25+ years, severely impaired from CP. Participants in the patients FG were selected from patients with CP aged 25+ years, able to participate in the FG discussion. The list of potential participants was further expanded with names provided by those initially contacted. All potential participants received the informed consent form and a questionnaire to collect personal information. The study protocol was approved by the Ethics Committee of the Azienda Ospedaliero-Universitaria Careggi.

Data collection

The FGs were conducted in an educational meeting room of the Azienda Ospedaliero-Universitaria Careggi and lasted approximately two hours. None of the participants provided (the physiotherapists) or received (the parents/caregivers and the patients) care and rehabilitation in this facility.

All FGs were conducted by the same moderator (MA, child neuropsychiatrist), who had not been involved in study design, and were audio-recorded. Two investigators (VP, LM, physiotherapists expert in CP) took notes to capture contextual details and non-verbal expressions for data analysis and interpretation, but did not actively participate in the FGs.

MA, VP and LM knew some of the FG physiotherapists but had no clinical relationships with the participating parents/caregivers and patients.

Prior to FG conduction, the investigators had prepared some guiding questions for the moderator, which were partially reviewed after completion of the parents/caregivers FG, to better adapt to the subsequent FGs. Discussed themes included: 1) main rehabilitative needs of adults with CP; 2) options offered by healthcare services; 3) strengths and weaknesses of services on offer; 4) suggestions to improve service organization. However, the moderator was free to decide how much time to dedicate to each intervention, according to the flow of the discussion. Audio-recordings were subsequently transcribed by VP, protecting responders' identity.

Coding and analysis

To improve the reliability of the analysis, the transcriptions were read and coded separately by VP, LM, and MDB; MDB has research methodology expertise but no professional involvement with CP.

On a first reading of the FG transcripts, each investigator created, through an iterative process of immersion into the data and crystallization, a list of recurring themes, with related definitions and coding rules (including inclusion and exclusion criteria) and text examples for each theme. The lists were then compared and a final list was generated by retaining themes proposed by more than one investigator; the other themes were discussed and eventually deleted if not suitable to be incorporated into another theme.

After a further round of reading, the investigators separately choose the excerpts to be assigned to each theme. Disagreements were solved by consensus. The importance of a theme was corroborated by, although not entirely based upon, the number of excerpts that could be referred to that theme and by the number of participants that produced those statements. In a final discussion, excerpts to be reported in this article were selected and translated by an English mother tongue investigator (ATR).

Results

Sample

All participants lived in Tuscany, in health districts (Firenze, Prato, and Pistoia) where high-quality care is traditionally provided to pediatric patients with CP. Eight participants were in the parents/caregivers' FG, assisting adult children severely impaired from CP (Table I). The group of adult patients with CP included five persons cognitively intact, as indirectly shown by their educational attainments, and satisfactory functional autonomy (Table II). Six physiotherapists, mainly employed in public rehabilitation services, participated in the FG (Table III): of which five had been working with patients with CP for 25+ years, and one participated in an innovative program dedicated to adult patients with CP.

Findings from the FG transcripts

Recurring themes from the transcripts are presented here. Textual citations are reported in Italian font, together with participant's numeric id.

1) Rehabilitation needs – “A plea for a comprehensive approach aimed at maintaining independence”

Participants described a host of rehabilitation needs of adult patients with CP, with the overarching goal of “*maintaining learned skills... and use those skills to lead an independent life - 17*”. In particular, patients strongly required that rehabilitation be based on individual's priorities, to support integration and socialization. Control of deformity and pain was frequently mentioned as crucial to preserving quality of life. Two patients also offered that “*learning how to breathe better and how to relax gives [good] results not only from a physical point of view, but also helps to speak better - 9*”.

2) Assistive devices – “Crucial, yet difficult to obtain”

Participants agreed that assistive devices are fundamental for wellbeing, autonomy, and qual-

TABLE I.—*Characteristics of participants in the caregivers' focus group and of their adult children with cerebral palsy.*

Caregivers								
Id	Age (yrs)	Gender	Health district of residence	Education	Occupation	Age (yrs)	Gender	Education
1	53	Female	Florence	High school	Homemaker	26	Female	None
2	78	Female	Florence	Elementary school	Retired	55	Female	None
3	81	Male	Florence	Middle school	Artisan	52	Male	Elementary school
4	76	Female	Florence	High school	Homemaker	42	Male	Middle school
5	74	Female	Florence	Elementary school	NA	48	Female	Not available
6	63	Female	Prato	High school	Entrepreneur	28	Male	High school
7	42	Female	Pistoia	Middle school	Entrepreneur	25	Male	Middle school
8	39	Female	Prato	Bachelor degree	Teacher	25	Male	High school

TABLE II.—*Characteristics of participants in the patients' focus group.*

Id	Age (yrs)	Gender	Health district of residence	Education	Occupation	CP clinical form	Mobility independence level	Epilepsy	Visual impairment	Hearing impairment
9	51	Male	Florence	Bachelor's degree	None	Dystonic tetraplegia	Wheelchair	No	No	Yes
10	52	Male	Florence	Bachelor's degree	Clerk	Dystonic tetraplegia	Ambulatory	No	No	No
11	25	Male	Prato	College student	None	Spastic tetraplegia	Wheelchair	No	No	No
12	32	Female	Prato	Bachelor's degree	Clerk	Spastic tetraplegia	Wheelchair	No	No	No
13	28	Female	Florence	College student	None	Diplegia	Double crouch ambulation	No	Yes	No

TABLE III.—*Characteristics of participants in the physiotherapists' focus group.*

Id	Age (years)	Gender	Health district of occupation	Type of rehabilitation service	Duration of service with CP patients (yrs)
14	51	Female	Florence	Private, community-based	25
15	60	Female	Florence	Public, community-based	36
16	57	Female	Prato	Public, hospital-based	33
17	48	Female	Prato	Public, community-based	25
18	40	Male	Prato	Public, community-based	1
19	54	Female	Florence	Public, community-based	30

ity of life, and that they need to be constantly checked and adapted throughout the patient's lifespan and changing functional conditions. Provision of adequate assistive devices should take into account the abilities of the caregivers as they grow older and may become unable to mobilize their affected adult child.

Most participants underlined enormous difficulties to obtain such devices in a timely fashion: although they are usually provided free of charge by the Italian national healthcare system, the bureaucracy can be very slow and patients often pay for devices out of their own pocket. According to the physiotherapists, this depends not only on

insufficient economic resources but also on the lack of programs for the maintenance, overhaul, and recycle of devices already in use.

In children, it is physiotherapists that usually guide the choice and personalization of assistive devices. This apparently happens rarely with adult patients with CP: "*When you go to the shop [a mobility device showroom], you're alone and rely on the good heart of the seller to tell you about device characteristics and how they may be different from the ad - 12*". Some adult patients with CP may be able to manage this situation, because they "*have always been disabled and have learned about themselves - 11*".

Adult children with CP							
Occupation	CP clinical form	Mobility independence level	Epilepsy	Sensory impairment			
				Vision	Hearing	Speech	
None	Spastic tetraplegia	None	Yes	Yes	Yes	Expression and comprehension	
None	Spastic tetraplegia	None	No	No	No	Expression	
Clerk	Spastic tetraplegia	Wheelchair	No	No	No	Expression	
None	Dystonic tetraplegia	Ambulatory	No	Yes	No	Expression	
None	Hemiplegia	Ambulatory	Yes	Yes	No	None	
None	Spastic tetraplegia	Wheelchair	No	No	No	None	
None	Dystonic tetraplegia	None	Yes	No	No	None	
None	Spastic tetraplegia	None	Yes	No	No	Expression	

3) Delivery of rehabilitation services – “One size does not fit all.”

As participants pointed out, rehabilitation services offered to adult patients with CP are usually limited to two cycles a year, each including ten sessions of 2-3 different activities (e.g., physiotherapy, speech therapy), independent of patient’s needs assessment. Conversely, having “*treatment tailored to specific necessities and not provided randomly, just because... it’s springtime or autumn and it’s time for our physio cycle! - 18*” would be a more effective way to offer rehabilitation. On the other hand, structured rehabilitation was not considered an all-purpose panacea: most participants suggested that well-functioning adult patients with CP might go to the pool or gym, to do “*activities to maintain the highest possible level of wellness and functioning - 15*”.

4) Strengths and weaknesses of rehabilitation services – “A patchwork of lights and shadows”

Some CP patients reported positive experiences within rehabilitation services: however, these were episodic and often strictly linked to the fortunate presence of a sensitive, dedicated professional, rather than to a solid network of services. Because of the lack of established transition programs, feelings of abandonment and dissatisfaction with purely on-demand services were common: “*A healthcare service based on patient’s request cannot meet real needs, because often who asks the most is not necessarily who needs the most - 15*”. Furthermore, such a disappointing level of service organization had the ultimate conse-

quence of inappropriateness of the interventions delivered. The only exception was reported to be in Prato, where a systematic check of all patients transitioning from childhood to adulthood has recently been developed, to precociously identify possible problems and propose solutions. Participants who had had this experience were very satisfied: “*Families and kids no longer feel that growing up is a leap into darkness - 18*”.

Complaints were made about the professional competence in managing adult patients with CP by general practitioners (“*my GP doesn’t know my daughter, he has no idea how to deal with a disabled girl with her problems - 1*”) and in some specialty doctors. Other complaints were represented by physical and economic barriers to accessing pools and gyms in non-rehabilitation facilities.

5) Suggestions – “There is always room for improvement...”

As a first measure to improve the delivery of rehabilitation services to adult patients with CP, the caregivers’ FG strongly requested to register and track children with CP as they grow older.

A compelling need for better education and training of professionals, both in primary and in specialty care, was expressed. Participants also suggested the creation of expert, dedicated professional teams under the lead of a case manager, who should guide the process of care in response to ordinary and emerging needs, and optimize existing resources. The case manager should be alerted by childhood services and schedule a routine assessment for any incoming patient with CP, transitioning towards adulthood.

Improving service architecture might also enhance appropriateness, grounding interventions on individual's needs and priorities. A further suggestion was to implement programs for the maintenance, adaptation, overhaul, and recycle of assistive devices, with an orthotics technician as a team member.

Based on his son's experience abroad, a parent suggested to introduce occupational therapy in Italy, "*which transforms every activity of daily living into a form of rehabilitation - 7*". With a somewhat argumentative tone, a patient underlined the importance of counseling and sharing of experiences among disabled individuals with similar problems: "*I trust other disabled persons more than the people who work in social or healthcare services - 1*".

6) *Integration and independence needs – “We’ve come a long way, nevertheless...”*

Besides themes specifically related to rehabilitation issues, participants in the patients' and caregivers' FGs expressed a strong need for socialization and independence. Most of them stated that services are of no help to this goal, often because of an excessive staff turnover: "*Social workers change at the rate of paper napkins at a picnic! - 5*". Parents of patients with severe CP complained that, because of diminished economic resources in the community, isolation and loneliness of their children has increased: social services more easily sustain patients with milder levels of disability, who, on the other hand, need less help.

Nevertheless, it was acknowledged that school and workplace integration has come a long way: "*We are the sons of integration... the first disabled [individuals] who do not live their lives apart from others... Must be very proud of this! - 9*". Individual responsibilities must be taken in this process of emancipation: "*You cannot expect everything from services, we are adults, not children anymore... Adults must take on their own responsibilities, and they must or should exert their freedom - 9*".

7) *The family's struggle – “Where will they go after us?”*

An issue raised only by caregivers was the fate of their children once the parents pass away. “A

difficulty we see, which hammers my brain every single day, is that at our age we lean more there [towards death] than here... A lot has been said, but nothing has been done. In spite of our efforts, no solution is at hand in our city, to look after our children tomorrow - 4". They asked “*not for a long-term care facility or a hospital*”, but for something which would “*substitute the family as much as possible. A strong initiative must be taken by the City or Region government: without them, there is no service, no voluntary association that can take over - 4*".

Discussion

According to participants in this qualitative study, adult patients with CP have a number of rehabilitation needs, stemming from their progressive loss of physical functioning. Most of these needs remained unmet, sometimes even unrecognized, by health services in this area of Tuscany, which were reported to suffer from lack of systematic organization, proactive recognition of problems, and continuity of care in the transition from childhood to adulthood. Problems were not confined to the domain of rehabilitation, but extended to primary medicine and social services.

Our findings are in agreement with those reported in previous studies, which documented that the transition towards adulthood is often associated with functional loss and diminished participation and social interaction in patients with CP, paralleled by a dramatic decrease in contacts with health and rehabilitation services.^{8, 9, 11-16, 19, 23, 24} In a Canadian qualitative study,²⁵ barriers to accessing healthcare services, poor professional competence, and lack of information were identified as major problems. Thus, the inability to face the specific problems of adults with CP, representing a relatively new kind of patients, are not limited to Italy. Nevertheless, we recognize that the issues raised in this study are of particular importance in Italy, where the literature on this topic is very limited and mainly focused on the implications to pediatric neurorehabilitation, more than on building a comprehensive approach to the evolving needs of these patients across their prolonged lifespan.⁸

CP has an extremely wide clinical and functional spectrum, and rehabilitation must be tuned to individual patient's needs. Activity limitations in CP are not simply a mirror of motor impairments, but rather depend on multifactorial influences. Rehabilitation approach should be activity-oriented and go beyond treating specific impairments.²⁶

Therefore, the routine provision of two cycles of rehabilitation per year, as most commonly offered by healthcare services, is quantitatively and qualitatively unsatisfactory. Most participants proposed a model to deliver rehabilitation, where visits would be scheduled on a regular basis for every patient with CP transitioning to adulthood, within programs held by dedicated professional teams and led by a case manager. A model close to the one suggested was the one newly activated in Prato, with encouraging initial results, and others have been proposed in literature, although only partially implemented. In 2001, the Gillette Specialty Healthcare in the US developed an integrative care program for outpatient and in-patient children with CP in their transition to adulthood. Patients, caregivers, and providers collaborated to create a comprehensive care plan, meeting each patient's needs, preferences, and priorities. After a pilot experience, the Gillette program developed in a more mature form, which is considered as a model satisfying the emerging needs of young adults with CP.²⁷ Notwithstanding the differences between the US and the Italian healthcare systems, the suggestions made by our participants echoed the few experiences reported in literature and should be considered in the design of effective models of care.

An issue of crucial importance in everyday life of patients with CP is the appropriate prescription and maintenance of assistive devices, which help improve function and preserve independence. Dissatisfaction with the overall management and periodical checking of assistive devices was frequently reported. Modest resource investments might easily fix this problem and consent, by constantly repairing and adapting such devices to changing patients' needs, to improve their autonomy and quality of life. This would also prevent the need for replacement of worn-out devices and associated costs.

Besides organizative and economic barriers, adult patients with CP frequently reported poor knowledge and competence on their specific problems in the healthcare professionals taking care of them. Again, similar findings were found in previous studies²⁵ and highlight the critical issue of lack of education and training in this area, both in primary and in specialized care. Issues of social integration and individual freedom were also emphasized: this implies that rehabilitation services should include a wide network of competences, with the final outcomes of maximizing independence, preserving social role, and increasing quality of life.

The parties involved in this study (patients, caregivers, and physiotherapists) shared most views and reached similar conclusions on the main issues. An exception was represented by the issue, expressed only by the caregivers, of the fate that awaits their child following their death. Many of the parents were indeed aged, deeply concerned because they were about to leave their disabled adult children almost devoid of the support required. For most of their life, they had been the only advocates and sources of care for their beloved, and healthcare and social services were felt as unable to substitute for them after death. This "after us" theme has profound ethical implications, because it is against our culture and values to ignore the problems of such severely dependent patients, as well as the concern of their parents.

Study limitations

With our numerically limited sample and only three FGs, we might not have reached saturation. However, the remarkable level of consistency found in the opinions expressed suggests that saturation was in fact probably obtained. As in other qualitative studies, a potential exists for excessive subjectivity in data collection, analysis, and reporting. To limit this possible bias, the moderator was not involved in study design, and transcripts were analyzed by three blinded investigators, one of whom did not participate in the FGs and had no professional involvement with CP. Our results, obtained in a single area of Tuscany, might be poorly generalizable. Never-

theless, problems and solutions were similar to those found in international literature, suggesting external validity of our findings.

Conclusions

This qualitative study indicates, with a substantial level of agreement among physiotherapists, caregivers, and patients, problems and possible solutions regarding rehabilitation and care of adult patients with CP. Although our findings should be considered as preliminary and could be reconsidered in an extended study, they do confirm that interest for CP cannot any longer be restricted to professionals in the pediatric field, but should extend to providers caring for young and middle-aged adults. As this study shows, a strong tradition for good rehabilitation and care to children with CP in a given area does not necessarily translate into an adequate level of these services to adults with the same condition.

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This material has been presented as an abstract at the 3rd National Congress of the Italian Society of Physiotherapy, Naples, May 24-25, 2013.

Conflicts of interest. — The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

Received on January 9, 2014. - Accepted for publication on April 2, 2014.

Corresponding author: M. Di Bari, MD, PhD, Department of Experimental and Clinical Medicine, Research Unit of Medicine of Aging, University of Florence, viale Pieraccini 18, 50139 Florence, Italy. E-mail: mauro.dibari@unifi.it

The Italian Journal of Physiotherapy: what's up now?

M. BACCINI¹, M. PACI², R. GATTI³

¹Motion Analysis Laboratory, Unit of Functional Rehabilitation, Azienda Sanitaria di Firenze, Florence, Italy; ²Unit of Functional Recovery, Prato Hospital, Prato, Italy; ³School of Physiotherapy, Fondazione Centro San Raffaele, Milan, Italy

ABSTRACT

The aim of this article was to present the state of affairs of the Italian Journal of Physiotherapy (*It J Physiother*), and to compare its activity to those of other European physiotherapy leader journals as regards types, topics and first authors' nationality of articles published in the last three years.

As regards the first author's nationality, the *It J Physiother* has still the highest percentage of first authors who come from the country where the journal is published. However, the last issues of the *It J Physiother* include an increasing number of articles from non-Italian authors, so this gap is getting smaller. Conversely, the other comparisons show less striking, though significant, differences about the four journals. As regards the types of published articles, the proportion of published papers that are most relevant for Evidence-Based Practice, *i.e.* systematic reviews and RCTs, is even greater in the *It J Physiother* (44%) than in the other journals. (*It J Physiotherapy* 2014;4:31-8)

KEY WORDS: Evidence-based practice - Periodicals as topic - Journal article.

Evidence-based practice (EBP) has been defined as a process integrating the “best research evidence with clinical expertise and patient values”.¹ Journals are generally the most important instrument in the dissemination of research results and the promotion of EBP.²

Most of physiotherapy journals are gathered in the International Society of Physiotherapy Journal Editors (ISPJE),³ a network supported by the World Confederation for Physical Therapy (WCPT). In 2013, the ISPJE included 117 journals worldwide. According to the ISPJE, the Asia Western Pacific region has the higher number of journals (67, 57.3%) and Europe is the second region with 28 (23.9%) journals (Table I).

The ISPJE database reports the language of publication for only 60 (51.3%) journals, of which 43 are published in English language. However, by checking the websites of each journal for which the information is not reported

in the database, it was possible to recognize the language of publication for all but three journals (Table II). Most of journals (70/117) were found to be published in languages other than English, whereas 44 journals - only 37.6% of the total number of journals listed in the ISPJE database - are published in the English language. Three journals, though quoted in the database, do not have a website and no information could be retrieved in the web about them. These journals are published in Ghana, Lebanon and India, respectively.

Table III shows the language of publication of physiotherapy journals by region. Only about one third of European physiotherapy journals publish articles in the English language, most of which (N.=7) are published in the United Kingdom.

The Italian Journal of Physiotherapy (*It J Physiother*) has been recently included in the ISPJE

TABLE I.—*Distribution by region of physiotherapy journals quoted in the database of the International Society of Physiotherapy Journal Editors.*

	Number	Percent
Africa	4	3.4
Asia-Western Pacific	67	57.3
Europe	28	23.9
North Am	12	10.3
South Am	6	5.1
Total	117	100

TABLE II.—*Language of publication of physiotherapy journals quoted in the database of the International Society of Physiotherapy Journal Editors.*

	Number	Percent
Unknown	3	2.8
English	44	37.6
Other language	70	59.8

TABLE III.—*Language of publication by region of physiotherapy journals quoted in the database of the International Society of Physiotherapy Journal Editors.*

	Unknown	English	Other
Africa	1	3	0
Asia-Western Pacific	1	19	47
Europe	1	9	18
North Am	0	12	0
South Am	0	1	5

database, pushing to 45 and to 10 the number of English language journals published throughout the world and in the European region, respectively. The *It J Physiother* is an English language, peer-reviewed, published online journal. A peer review process is provided for all articles submitted. Manuscripts received by the Editorial office are sent to the Editor in Chief for the indication of at least two peer reviewers, who are asked to reply their review in 14 days. The *It J Physiother* is currently indexed on Cinahl, EBSCOHost and PEDro databases, and the indexing on EMBASE has been required. The journal is published by Minerva Medica, an Italian publisher, and started publications in March 2011. Given that no English language physiotherapy journals is currently being published in most of European countries, the *It J Physiother* has the potential to become a reference journal especially for European physiotherapists.

The aim of this article is to present the state of affairs of the *It J Physiother* in the context of the international journals addressing the field of

physiotherapy. In particular, the *It J Physiother* is compared to some European leader journals as regards types, topics and first authors' nationality of articles published in the last three years.

Methods

Among the other nine European physiotherapy journals currently published in English, only journals dealing with all fields of physiotherapy and not restricted to specific types of articles were selected for comparisons. Therefore, journals addressing a particular field of physiotherapy (*i.e. Manual Therapy* and *Physical Therapy in Sport*) and, conversely, journals that are not limited to physiotherapy and rather constitute interdisciplinary journals for all health and rehabilitation professions (*i.e. International Journal of Therapy and Rehabilitation* and *International Journal of Physiotherapy and Rehabilitation*) were excluded regardless of their relevance. One more journal (*Physical Therapy Reviews*) was excluded since it aims to publish just contemporary reviews,

discussion papers and editorials. Four journals were thus selected: *Physiotherapy*, *Physiotherapy Research International*, *European Journal of Physiotherapy* and *Physiotherapy Practice and Research* (the latter is still quoted in the ISPJE database with the former name, i.e. *Physiotherapy Ireland*, but the journal has changed its name since 2012).

Physiotherapy (quarterly, Elsevier, United Kingdom) is the official journal of the Chartered Society of Physiotherapy. It is published since 1948, is currently indexed in several international databases, including Medline, and has an IF of 1.558, ranking #26 among all 62 rehabilitation journals.

Physiotherapy Research International (Physiother Res Int), quarterly, Wiley-Blackwell, United Kingdom) is published since 1996 and is currently indexed in several international databases, including Medline, but it has no IF. Beginning in 2014, *Physiotherapy Research International* will be published online only.

Physiotherapy Practice and Research (Physiother Pract Res), half-yearly, IOS, Ireland), formerly *Physiotherapy Ireland*, is the official journal of the Irish Society of Chartered Physiotherapists. It is published since 1979 and is currently indexed in Scopus and in PubsHub.

European Journal of Physiotherapy (Eur J Physiother), quarterly, Informa/Healthcare, Sweden) is published since 2013 but it continues *Advances in Physiotherapy* which started publication in 1999. It is currently indexed in Amed, CINAHL, Excerpta Medica/EMBASE, PEDro, Swemed.

For all the journals, the three-years period 2011-2013 has been considered except for *Physiotherapy*, for which only two years (2012-2013) was examined since this journal publishes in each issue a far higher number of papers than the other journals. All papers that have been published in the selected period, except for the Editorials, book reviews and congress proceedings, were examined by two authors (B.M., P.M.) as regards the following features:

a) first author's nationality - nationality was classified according to the five regions of the WCPT (Africa, Asia-Western Pacific, Europe, North America, South America); however, in

order to verify to what extent a journal draws submissions mainly from the country where it is published, the "Europe" region was split into two categories: first author's country, when the first author comes from the country where the journal is published (i.e. Italy for *It J Physiother*, United Kingdom for *Physiotherapy* and *Physiother Res Int*, Sweden for *Eur J Physiother*, Ireland for *Physiother Pract Res*) and "Europe other", i.e. European countries other than the country where the journal is published;

b) study designs - published papers were classified into 11 designs: Systematic reviews, Randomized Clinical Trials, Non-systematic reviews, Single-subject designs, Case series/case reports, Observational studies, Validations studies, Letters, Guidelines, Qualitative researches, Protocols;

c) topics - addressed topics were grouped into 11 categories, based mainly on subjects enrolled: healthy subjects (i.e. the study enrolled only healthy participants, though the study results could conceivably be applied to the treatment of people with a specific pathology), muscular-skeletal conditions, neurological conditions, cardiotoracic conditions, continence/woman health, oncology, metabolic conditions (including obesity), physiotherapy in sport, ergonomics, professional issues (e.g. ethical principles, responsibilities, legislation, relationships with other health professionals, educational issues); not applicable (topics that could not be classified according to these categories, e.g. in vitro studies or studies encompassing multiple topics).

Differences in each feature among the four journals were estimated using chi square tests, first comparing all journals together and then separately comparing each journal to one another.

Results

In the three-years period since starting of publication (2011-2013), the *It J Physiother* has published a total of 41 papers, besides the Editorials and the proceedings of three National Congresses of the S.I.F. The mean number of revisions before publication was 2.2 ± 1.7 . 7 articles have been rejected.

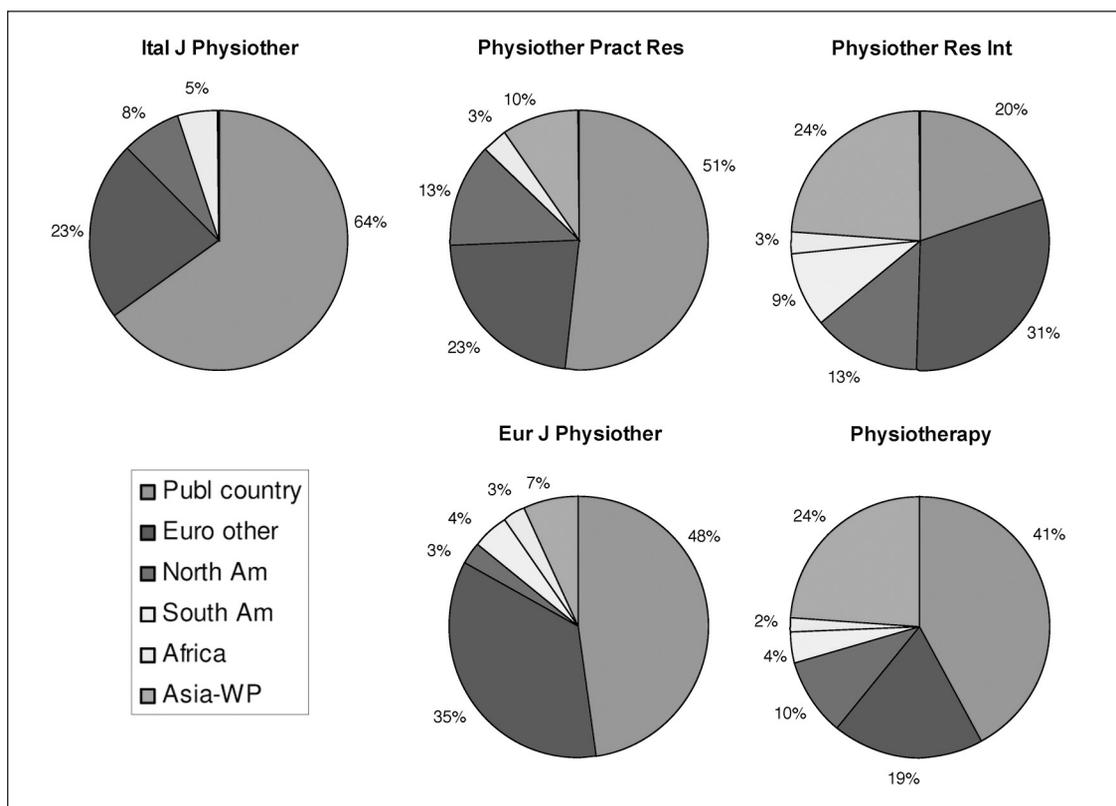


Figure 1.—Significant differences ($P < 0.001$) among the four journals with respect to the nationality of the first authors of published articles.

In the examined period, the number of articles that have been published by *Physiother Pract Res*, *Eur J Physiother*, *Physiother Res Int* and *Physiotherapy*, excluding Editorials, congress proceedings and book reviews, is 31, 71, 77 and 105, respectively.

First author's nationality

Significant differences ($P < 0.001$) were found among the four journals with respect to the na-

tionality of the first authors of published articles, which is shown in Figure 1. The *It J Physiother* has still the highest percentage of first authors who come from the same country of publication. However, the nationality of first authors is significantly different in the *It J Physiother* papers when compared to *Physiother Res Int* ($P < 0.001$) and to *Physiotherapy* papers ($P = 0.008$), but not when compared to the *Eur J Physiother* papers ($P = 0.141$) or to *Physiother Pract Res* ($P = 0.278$) (Table IV). Indeed, in this respect the *Eur J Phys-*

TABLE IV.—Result of chi square test when the journals were compared to each other as regards first author's nationality.

	<i>Eur J Physiother</i>	<i>Physiother Res Int</i>	<i>Physiotherapy</i>	<i>Physiother Pract Res</i>
<i>It J Physiother</i>	8.252 P=0.143	30.325 p<0.001	15.692 P=0.008	5.096 P=0.278
<i>Eur J Physiother</i>		22.463 P=0.001	14.625 P=0.012	6.404 P=0.269
<i>Physiother Res Int</i>			13.590 P=0.035	13.904 P=0.031
<i>Physiotherapy</i>				4.619 P=0.464

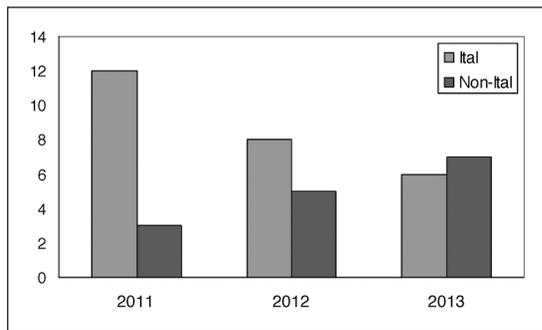


Figure 2.—Number of papers from Italian (Ital) and non-Italian (Non-Ital) authors published on the *It J Physiother* per year.

iother and *Physiother Pract Res* show a rather similar distribution, that emerges even more clearly taking into account the fact that for those journal most of “Euro other” authors (i.e. authors who come from an European country other than the country where the journal is published) come from neighbouring countries: 13/25 from Norway and 7/7 from the United Kingdom, respectively.

Though most of papers published in the *It J*

Physiother in the 2011-2013 period have been submitted by Italian researchers, the last issues of this journal include an increasing number of articles from non-Italian authors, so in this respect the gap with the other journals is getting smaller (Figure 2).

Types of articles

The four journals differed from one another (P=0.001) also with respect to the types of published articles (Figure 3). The proportions of different types of articles published in the *It J Physiother* were significantly different when compared to the *Eur J Physiother* (p<0.001) and to *Physiother Res Int* (P=0.18), whereas they were similar when the *It J Physiother* was compared to *Physiotherapy* (P=0.138) and to *Physiother Pract Res* (P=0.91). However, differences were detected also among the other journals (Table V).

One of the most striking differences with the other journals is the complete lack of qualitative researches in the issues of the *It J Physiother*.

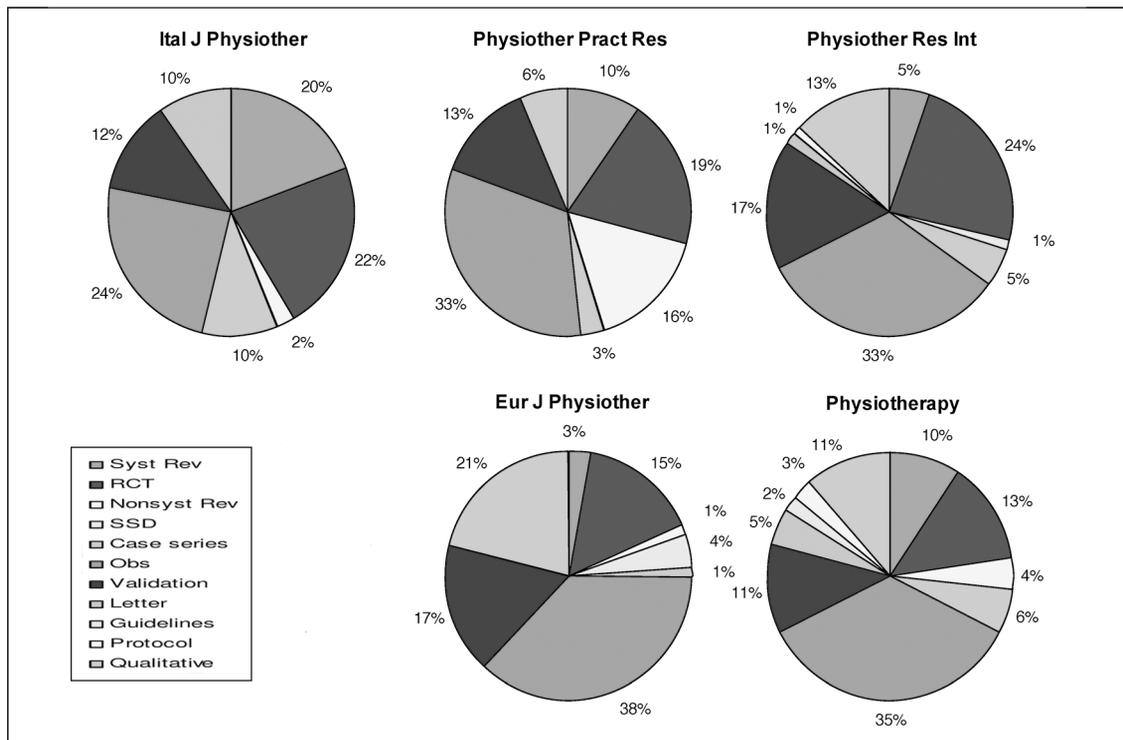


Figure 3.—Differences among the journals also with respect to the types of published articles.

TABLE V.—Result of chi square test when the journals were compared to each other as regards types of published articles.

	<i>Eur J Physiother</i>	<i>Physiother Res Int</i>	<i>Physiotherapy</i>	<i>Physiother Pract Res</i>
<i>It J Physiother</i>	31.842 p<0.001	19.996 P=0.018	13.565 P=0.139	12.299 P=0.091
<i>Eur J Physiother</i>		8.987 P=0.438	20.516 P=0.025	15.012 P=0.036
<i>Physiother Res Int</i>			12.675 P=0.242	15.731 P=0.073
<i>Physiotherapy</i>				10.002 P=0.350

Conversely, all the other journals have published some qualitative studies, in a percentage which ranges from 6% of *Physiother Pract Res* to 21% of the *Eur J Physiother*. As regards this feature, however, a noteworthy finding is that the proportion of published papers that are most relevant for Evidence-Based Practice, *i.e.* systematic reviews and RCTs, is even greater in the *It J Physiother* (44%) than in *Physiother Res Int* and *Physiother Pract Res* (29%), *Physiotherapy* (23%) and *Eur J Physiother* (18%).

Addressed topics

Differences among the journals were less striking but still significant (P=0.023) with respect to topics addressed in the published articles (Figure 4). When comparing the *It J Physiother* separately to the other journals, significant differences were found only with the *Eur J Physiother* (P=0.026) and with *Physiotherapy* (P=0.012) (Table VI).

In all journals, the majority of papers dealt with healthy, neurologically impaired or mus-

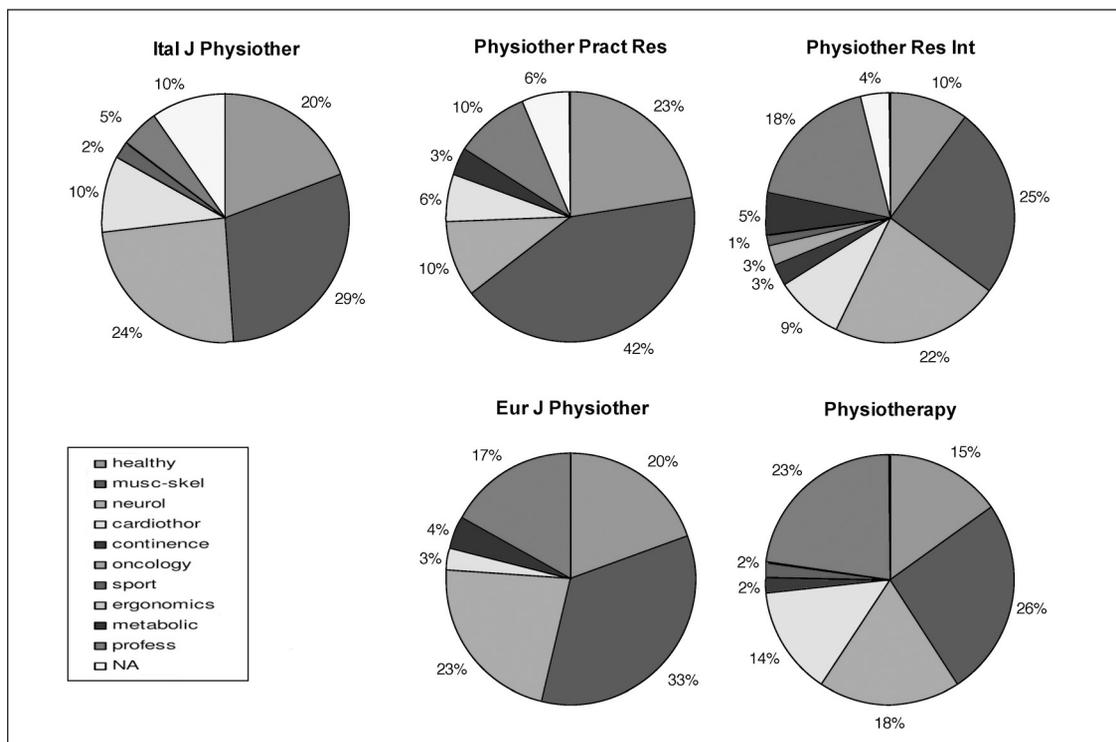


Figure 4.—Differences among the journals with respect to topics addressed in the published articles.

TABLE VI.—Result of chi square test when the journals were compared to each other as regards addressed topics.

	<i>Eur J Physiother</i>	<i>Physiother Res Int</i>	<i>Physiotherapy</i>	<i>Physiother Pract Res</i>
<i>It J Physiother</i>	15.938 P=0.026	11.438 P=0.247	17.938 P=0.012	6.139 P=0.524
<i>Eur J Physiother</i>		13.101 P=0.158	15.519 P=0.030	8.523 P=0.202
<i>Physiother Res Int</i>			15.093 P=0.088	10.133 P=0.340
<i>Physiotherapy</i>				18.564 P=0.017

cular-skeletal impaired participants. These three categories together account for from 57% (*Physiother Res Int*) to 76% (*Eur J Physiother*) of all articles, and muscular-skeletal conditions are always the most frequently addressed topic. Papers dealing with cardiothoracic impairments are the fourth most frequently published on the *It J Physiother*, where, contrary to the other journals, the articles addressing professionals topics are relatively infrequent.

Discussion

Data presented show that the *It J Physiother*, despite being a new and quite young Italian journal in the field of physiotherapy, is beginning to draw attention from researchers working in other European and extra-European countries. It is noteworthy that, as regards first author's nationality of published papers, significant differences were found only when the journal is compared to other European physiotherapy journals that are currently indexed for Medline, *i.e.* *Physiotherapy* and *Physiother Res Int*. This was expected, since Medline is definitely one of the most important resource for biomedical researchers from all over the world and influences researchers in their choice of journals in which to publish.⁴ It is also remarkable that over the *It J Physiother* issues the proportion of non-Italian first authors has progressively increased to the point that in the last year issues the articles signed by an Italian first author were no more prevalent. This trend is even strengthened in currently pending papers, of which over 77% have been submitted by non-Italian authors.

Results are also promising as regards the content of the journal. An unexpected finding was

that the proportions of systematic reviews and RCTs are even higher in the *It J Physiother* than in the other journals. This is considered a particular positive finding, since the journal owner, the Società Italiana di Fisioterapia, was founded with the declared purpose "...to promote scientific activities within the physiotherapy field and to promote the dissemination of knowledge and clinical evidence based practice",⁵ and the relevance of such designs for determining the effectiveness of interventions is well established.^{6,7} In this respect, however, also the quality of published research is an important feature, since in low quality RCTs the risk of biases is high and therefore their internal validity is questionable.^{7,8} Since in the present study no attempt was made in order to assess the quality of articles that have been published in the selected journals, this question remains unclear.

Though in different proportions, the topics addressed in the published articles are not dissimilar to other consolidated journals, with the fields of neurorehabilitation and muscular-skeletal disorders collecting most of researches, together with studies in healthy participants. Conversely, articles addressing professional topics are rare and less frequent than in the other journals. *Physiotherapy*, for example, publishes more than four times the number of such articles than the *It J Physiother*. Indeed, professional articles constitute next to ¼ of all papers that are published in that journal. This fact is not surprising, considering that *Physiotherapy* is the official journal of the society of United Kingdom physiotherapists, which likely deals with both profession-related political issues and scientific research.

In conclusion, the analysis of the first three years of activity of the *It J Physiother* shows that

it is in line with the activity of other more developed and well consolidated European physiotherapy journals. The quality of articles published in the *It J Physiother*, however, is yet to be established.

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Conflicts of interest. — All authors are editors of the Italian Journal of Physiotherapy.

Corresponding author: M. Baccini, Motion Analysis Lab, Azienda Sanitaria di Firenze, Florence, Italy. E-mail: marco.baccini@asf.toscana.it