

Title: Results of an occupational self-analysis program in people with acquired brain injury. A pilot study

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Ana Judit Fernández-Solano and Maria Rodríguez-Bailón designed the study, participated in data acquisition and interpretation, and wrote and edited the manuscript. María Elena del Baño Aledo participated in data interpretation and wrote, edited, and critically revised the manuscript.

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Abstract:

Purpose: The aim of this study was to evaluate the benefits of an occupational self-analysis program in people with acquired brain injury (ABI) in the areas of subjective health perception and occupational participation. **Material and Method:** This study explored the benefits of an occupational self-analysis program in people with ABI. The intervention group comprised 7 participants; the control group included 5 participants. Outcomes were measured using the SF-36 Health Survey and the Role Checklist. The contents of solicited participant diaries and a focus group discussion were also analyzed. **Results:** Compared to the control group, the intervention group showed statistically significant improvements in the SF-36 energy/fatigue subscale. The qualitative analysis revealed that participants in the intervention group increased their occupational participation in activities of daily living (ADL), social involvement, and leisure. **Conclusion:** The program helped participants improve their health perception and increase their occupational participation through learning about their supports and barriers for engaging in meaningful activities.

Key words: occupational therapy; acquired brain injury; Model of Human Occupation; occupational participation.

Introduction

Acquired Brain Injury (ABI) is a serious public health problem because of its high incidence and prevalence, long-term effects, individual and family repercussions, and enormous socioeconomic costs. It is a growing disability in our society whose origin is due to sudden brain injuries caused by strokes, brain trauma, cerebral anoxia, brain tumors, or infections(1). An ABI is an injury to the brain that is not hereditary, congenital, degenerative, or induced by birth trauma ('Brain Injury Association of America'). In Spain, in 2014, there were 420046 people affected by brain injury; 78% of these cases were related to stroke and 22% were due to traumatic brain injury and other causes. More than 100000 new cases occur every year.

People who have experienced a brain injury can show objective limitations in Activities of Daily Living (ADL) and mobility(2) and a lower participation in society (3). Occupational participation has a significant influence on the health-related quality of life of stroke patients(4). In fact, not performing the desired occupations can lead on lower levels of life satisfaction in people affected by ABI (5) as this population defined quality of life as doing what they wanted, which was related to resuming meaningful activities and to a process of awareness leading to a restructuring of beliefs, behaviors, values, and goals(6).

In the field of occupational therapy, many approaches can be used to increase and reestablish meaningful occupational participation in this population and thus to have a positive impact on its quality of life and health perception. Specifically, occupation- and activity-based approaches delivered in a client-relevant environmental context by an occupational therapist have been shown to improve occupational participation (e.g., in ADL) in people with stroke(7). The occupation-based approach seems more effective at improving ADL performance in inpatient, outpatient, and community settings than the impairment remediation approach alone(8). In addition, including client-centered goal-

directed interventions and focusing on teaching compensatory strategies to people with ABI can improve their performance and satisfaction with their daily functioning(9) and reduce their disability(10).

Some occupation-based programs with a client-centered approach have been developed in this population like the one carried out by Lund et al(11–13)and an intervention program based on the Model of Human Occupation (MOHO)(14)had beneficial effects on quality of life, health perception and well-being and also in ADL performance and occupational participation. Also, another program called Occupational Lifestyle Redesign Programme (OLSR) made in China, included a goal-directed intervention through which participants set challenging goals and successfully implemented action plans that empowered their behavioral changes(15).

Recently, an occupational self-analysis program called *Envejehaciendo* ('AgeDoing')that combines these approaches (i.e., occupation-based, client-centered, and goal-directed interventions) has been developed for aging Spanish people(16).Occupational self-analysis is defined as an ongoing process that involves both self-perceptions and actions within the environment. In this practice, the occupational therapist guided the participants through a process of understanding why their particular occupations were important so they could adjust their routines to enable better quality of life(17,18).This program also allows individuals to think about their situation and be aware of it in order to begin occupational changes during the program by proposing individual and group goals.This process of becoming aware of how to take responsibility for, and control over, one's everyday activities it is called self-reflection(11,12).The 'Age Doing' program has achieved beneficial effects by using the See-Judge-Act methodology in combination with a Model of Human Occupation-based approach(16) to health perception and increasing the number of roles participants wanted to play in the future. It has also allowed participants to become aware of their

occupational strengths, values, interests and weaknesses. Although it has proven to be valid in a small one-group study with older participants, its effects have not been verified in a population with ABI.

Considering this, the aim of this study was to evaluate the benefits of an occupational self-analysis program adapted from the 'Age Doing' program in people with ABI in the areas of subjective health perception and occupational participation using both quantitative and qualitative data collection. The program was based on the See-Judge-Act intervention approach and the MOHO theoretical framework.

Material and method

Study design

The study had a quasi-experimental design, with a control group. Pretest and posttest measures were used and qualitative variables were added. This design was chosen so that qualitative data would validate the quantitative data and provide a greater understanding of the results.

Participants and recruitment process

Ethical approval for this study was obtained from the Ethics Committee of the University of Malaga, Spain (85-2015-H). First, two of the authors of this study contacted three associations of people with ABI to invite them to participate in the study. All of them were nonprofit organizations whose purpose was to reduce the consequences of the injury and give support to the people affected by ABI and their families. Two of them showed an interest in participating. Next, potential participants were informed verbally and through a written document about their participation in the study. Those who were interested signed to join the study. All the participants had ABI, were between 18 and 70 years old, and were members of an association for people with neurological impairment. The exclusion criteria

were having I) behavioral problems and/or II) serious problems speaking or understanding. These criteria were applied by the neuro rehabilitation team attending to clinical practice and diagnosis.

Participants were included in the control or the intervention group depending on which association they belonged to; the intervention group was made up of participants from Association 1; the control group was composed of participants from Association 2.

Data collection

To measure self-reported general health, the Short Form-36 Health Survey (SF-36) was used. This valid and reliable instrument consists of 36 questions about eight dimensions: general health, physical functioning, social functioning, role limitation due to physical health, role limitation due to emotional problems, emotional well-being, pain, and energy/fatigue(19). These dimensions can be grouped into a mental and a physical composite. This measure provides valuable information for medical rehabilitation, with practical utility for serial longitudinal assessment(20). It has been validated in people with traumatic brain injury(21) and also in the Spanish population, maintaining its qualities(22). The assessment was collected in individual interviews at the beginning and at the end of the program by one of three trained professionals.

Quantitative and qualitative approaches were used to assess occupational participation. First, Part I of the Role Checklist was used as a quantitative measure to assess occupational roles(23). This part of the tool identifies individuals' perception of their performance in internalized life roles in the past, present, and future (i.e., roles that they wish to have in the future).

The other tools were a solicited participant diary and a focus group. After each thematic module, participants in the intervention group were encouraged to record what they

had learned and how they had felt during the intervention. In addition, a focus group was conducted at the end of the program to address the supports and barriers for occupational participation. The guide used to lead the focus group was derived from a literature review (Table 1).

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Data analysis

Due to the sample size, quantitative data were analyzed with non-parametric tests. The baseline demographic, social, and medical variables between groups were compared with the Mann Whitney U-test (age) and Chi-Square test (sex, marital status, official level of disability, years from stroke, and living environment) to avoid bias. Quantitative data from the SF-36 and Part I of the Role Checklist were compared for each group separately before and after the intervention period using the Wilcoxon Signed Rank test. Next, to compare the effect of the program between groups, a new variable was created called 'Change Score' (posttest minus pretest scores on the SF-36 and Part I of the Role Checklist). The comparison between groups with this new variable was analyzed with the Mann Whitney U-test. The analysis was performed using SPSS Statistic 20 software (IBM Corporation 2011).

Qualitative content analysis was used to analyze the data from the solicited participant diary and the focus group. Literally transcribed documents were used for independent analysis. Participants' names were changed using an assigned code number in the transcripts and quotations. The activity participation analysis was undertaken using an initial set of categories based on the Occupational Therapy Practice Framework. The dimensions in which participants increased their knowledge about the supports and barriers for occupational participation were provided by the Model of Human Occupation (MOHO). This model explains why people are motivated to perform different activities by describing the following concepts: interests, values, and personal efficacy. It also explains how the activity is

organized into patterns and routines that support the fulfillment of role responsibilities. Finally, the MOHO analyzes the essential components required to perform the activities: motor, process, and social and communication skills. These three components interact with each other and the environment(24).The three authors of this paper reviewed the transcriptions separately and generated initial codes that were meaningful units of analysis. As more analyses were carried out, relevant topics were assigned to different categories. Differences between researchers were resolved by discussion. To facilitate the encoding process, the text fragments were encoded with MAXQDA 2016, a software for qualitative data analysis.

Procedure

The intervention group

During the period between February and June 2016, the intervention group participated in an occupational self-analysis program for 1 hour and a half per week during 5 months. This program was an adaptation of ‘Age Doing’(16),a program that has succeeded in improving health perception and meaningful occupational participation in Spanish elderly participants. The methodological strategies that provided a theoretical framework for the program were the MOHO and the See-Judge-Act approach. The MOHO is used to teach participants to identify which activities are meaningful for them and to become aware of the difficulties and supports for their occupational participation. The See-Judge-Act approach gives a logical structure to the sessions. It starts by determining what the situation and subsequently ‘judging’ it, that is, analyzing it from an individual and collective point of view and sharing what we wish to happen with the group. ‘Acting’ involves deciding what we want to change and going for it through a goal-based activity.

Two occupational therapists and an occupational therapy student facilitated the group and worked through the following thematic modules: 1) occupation, difficulty, and health; 2) occupational balance; 3) adaptation strategies to difficulties in occupational performance; and 4) social relationships.

Participants attended 19 group sessions in total and had one individual interview during the intervention to establish and clarify concepts and work on personal goals. To accomplish the task or activities participants had committed to, they did three outings into the community. First, they prepared a meal in a university center. This was an opportunity to practice some skills such as cooking, going shopping previously, or remembering the time they were supposed to be there. They also met to go to the cinema together and at the end of the program they organized a meal.

Control group

The control group continued with their activities of daily living and the rest of the activities of the association. These activities included occupational therapy and/or physiotherapy.

Results

Participants

Seven people agreed to participate in the study in the intervention group and five participated in the control group. The twelve initial participants completed the study. They all had ABI (10 as a consequence of stroke and 2 due to traumatic brain injury) and were diagnosed as having a percentage of disability by the relevant authorities according to Spanish legislation (Royal Decree 1971/1999 of 23 December). No statistical differences between groups were found in baseline demographic or social variables (Table 2).

--- Please insert Table 2 about here ---

Health perception

Baseline medical statistical differences were found between groups in 3 domains of the SF-36: role limitations due to physical health ($Z=-2.03$; $p=0.042$), social functioning ($Z=-1.99$; $p=0.046$), and mental composite ($Z=-2.03$; $p=0.042$); control participants scored higher in these domains. After the program, results showed positive changes in the 8 categories of the SF-36 and in the physical and mental composite in the intervention group; however, significant improvements were observed in the energy/fatigue category ($Z=-2.20$; $p=0.028$) and a marginally significant increase in the mental composite ($Z=-1.86$; $p=0.062$). A negative change was found in the control group, which scored worse in the 5-month posttest in 6 categories (Figure 1).

In the intervention group, results of between-group comparisons were close to showing significant improvements in social functioning ($Z=-1.85$, $p=0.063$) and in the mental composite ($Z=1.86$; $p=0.062$) (Table 3).

---Please insert Figure 1 about here---

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Occupational roles

No significant differences between the intervention and the control groups were found in the number of roles participants had at the time (Table 4). However, in participants who participated in the program, we found a marginally significant increase in the number of roles they would like to carry out in the future ($Z=0.707$; $p=0.072$); the average number of future roles was 6.57 before the implementation of the program and 8.25 after the program. This positive trend was not found in the control group.

--- Please insert Table 4 about here ---

Qualitative data showed that participants perceived an increase in their occupational participation. This happened in 3 types of activities: activities of daily living, (ADL), leisure, and social participation. We shall present them in subthemes with example quotes of participants with fictional names.

Regarding ADL, there was a common understanding that the program had allowed participants to learn new skills such as cooking or peeling fruit, which they were now able to do by themselves. In other tasks, such as getting dressed, they believed they had gained some autonomy but still needed to practice more.

I have learned to peel oranges, make fruit salad and peel garlic... *(Javier, 49 years old)*

I was determined to be able to cook and am now doing it. *(Alex, 54 years old)*

I am working on dressing and undressing, and the truth is that I can now put on some clothes by myself and need less help than I used to with others. *(Alberto, 69 years old)*

The main leisure activities participants reported they had started performing or were performing with greater frequency were attending recreational events and practicing sports.

I have increased the leisure activities I do; I went to a wedding, am meeting more people and feel a bit better. *(Ester, 46 years old)*

The other day I went to a barbecue. *(Sara, 60 years old)*

Now I go to the swimming pool and for walks along the promenade. *(Alex, 54 years old)*

Some participants reported starting to do activities with people they had recently met, spending time with people from the group or using the social media as a tool to increase the activities they did with people they already knew.

I have gone to the river with a new group of friends to do activities there. *(Roberto, 28 years old)*

We are all going for lunch today. *(Luis, 57 years old)*

I have set up a group on *Whats App* to get organized to meet; we are waiting to see when they are free. *(Ester, 49 years old)*

Besides, participants gained consciousness about two main topics: 1) supports for occupational participation and 2) barriers for engaging in it. The subcategories of each were structured according to the 4 subsystems of the Model of Human Occupation (i.e., volition, habituation, performance capacity, and environment). All the subsystems were represented in the “supports” topic, while three subsystems emerged in the “barriers” topic.

Supports for occupational participation

After implementing the program, participants’ knowledge about the supports and facilities for their occupational participation had increased.

Volition

Volition is a pattern of thoughts and feelings about oneself as an actor in the world and happens when we anticipate, choose, experience, or interpret what we do.

Participants not only reported personal values as a support for making occupational choices but also learned to prioritize, taking into account the personal values that were relevant for them.

The community is very important to help other people. *(Roberto, 28 years old)*

I have learned that to be independent you have to cook your own meals. *(Javier, 49 years old)*

If we know what we want and our mind is able to know what we want.....we can decide what is good for us and what is not. *(Sara, 60 years old)*

Participants reported they would choose to engage in an activity that they found satisfying and enjoyable. They said that interests are generated from positive experiences or can be based on the anticipation of enjoyment attached to engagement.

I have learned that sometimes when we try new things we like them. I didn't know because I hadn't done it before. *(Javier, 49 years old)*

Doing mindfulness was very interesting. I hadn't done it before. *(Ester, 46 years old)*

I want to do new activities that give me a break from my daily routine. *(Ester, 46 years old)*

All the participants agreed that their personal causation had increased by gaining knowledge about their abilities and not only their limitations. This became important to help them overcome difficulties.

I have a physical limitation but not a mental one. The other day I went to a barbecue and I came back quite angry because I thought, 'no one dances with me here'. *(Sara, 60 years old)*

I now feel stronger and more likely to be able to in the future; I'm not saying that I'm going to go to this place or the other, I'm saying that I can do it. If I can't go one way I'll go the other but I can go. *(Ester, 46 years old)*

Now I feel stronger to be able to do things. *(Luis, 57 years old)*

Participants also reported that they were clearer about what they wanted to achieve in life by sharing their personal goals for the future.

I would like to achieve what I want to and become healthier. *(Javier, 49 years old)*

Some things that have happened in my life are good and others are bad, but from now on I am going to try to see things as being less 'red' (referring to 'bad') and more 'yellow and green' (referring to 'good'). *(Ester, 46 years old)*

Habituation

Participants appreciated practicing as a tool to achieve personal goals. It also made them more aware of their abilities.

The fact of doing things, trying and achieving them, makes you realize that you can do them and you can keep doing them. *(Alex, 54 years)*

Performance capacity

Participants perceived that they had learned communication skills that involve relationships with others. These skills underline occupational performance.

I have learned to listen to someone else's problems. *(Alex, 54 years old)*

...and to laugh with other people. *(Javier, 49 years old)*

Environment

The environment influences our occupational participation in terms of what we decide to do and how we do it. There are different types of environments according to the Model of Human Occupation. Yet, participants talked mainly about how the social environment made them increase their occupational participation, differentiating between the social environment and the supports they found in the working group.

Participants reported that it was important to be aware that they needed help for some tasks and also for other people to be able to see their progress.

I could go to the end of the world but I need help. *(Sara, 60 years old)*

Recovering is a very slow process; you think you are the same but people realize that you are getting better *(Alex, 54 years old)*

Participants were very happy to work in peer groups. This allowed them to learn about the successes and experiences of others. In addition, realizing that they were not the only ones with a specific difficulty implementing a task gave them the courage to go for it.

...when I am here and another person is doing something I am also learning, I learn from them.*(Alberto, 69 years old)*

Of course, sometimes you believe that it is only you who is having a bad time and you feel bad, but when you come here and share your plight with others, that helps...I have seen people like me with my limitations and we are not alone in the world, we think we are but we are not. There are more people with difficulties that solve things that happen to them ...The group definitely helps.

(Ester, 46 years old)

Barriers for occupational participation

The qualitative analysis also provided evidence of an increase in participants' understanding of the barriers for engaging in meaningful occupations. They found that some aspects related to their volition, performance capacity, and environment hampered their occupational participation.

Volition

Not feeling capable of doing an activity was perceived as a limitation to participate in the community (e.g., using public transport).

One thing that I have never tried is to use public transport, because I think that I can't do it....there are two steps. I would be able to climb one because my son has a big car with one step and I put my right foot on it and lift my leg but in public transport I don't know...*(Alberto, 69 years old)*

Performance capacity

Not having some skills or abilities to interact with others can be felt as a difficulty to engage in some activities with others.

A problem that I had was doing activities with one of my girlfriend's friends. I did them and I would do them again, but it wasn't easy for me because we don't get on very well. Although he is not a bad guy I have to do it because he's one of my girlfriend's best friends. *(Roberto, 28 years old)*

Environment

Participants found difficulties in physical and social aspects of the environment for occupational participation.

The van that comes to pick me up has an elevator to pull up the wheelchair but travelling in it is very uncomfortable if there are potholes, so I am waiting for a footstool to get in the van and use a seat. *(Alberto, 69 years old)*

In the future I would like to plan to do something and actually do it. This is what I would have to do, but I can't do it because that would imply confronting my children and there are a lot of strong emotional issues to it.

(Sara, 60 years old)

Discussion

The result of this pilot study seems to indicate that an occupational self-analysis program had a positive impact on the health perception of people with ABI, mainly concerning the energy/fatigue subcategory. In addition, this program increased subjects' participation in different areas of occupation and their knowledge about the supports and barriers for engaging in meaningful activities.

Health perception

Regarding participants' perception of their own health, the program led them to achieve higher scores on the 8 categories of the SF-36. This trend was also observed in a previous study conducted with community-dwelling people in which the same methodology was used⁽¹⁶⁾ and in the Lifestyle Redesign® program^{17,25-27}(17,25-27). The 'AgeDoing' program achieved significant improvements in 3 of the 8 subcategories assessed by the SF-36 in groups of community-dwelling elders. Yet, we only found a significant

increase in the energy/fatigue subcategory in the intervention group. As we already argued, this could be a matter of time. The occupational self-analysis program in aging people lasted for 9 months (like the original Lifestyle Redesign® program) while the program with people affected by ABI took place over 5 months.

Other studies have also show improvements in health perception in this population. Harwood et al. found that a “taking charge” intervention in stroke survivors had benefits for the physical component of the SF-36. This program engaged patients and their families in the recovery process and, similarly to our intervention, facilitated a process through which they could identify areas in which to make progress and set personal goals(28).

Occupational participation (i.e., occupational roles and activities)

Quantitative data showed an increase that was close to significance in the number of occupational roles participants wished to perform in the future. Although the increase was 1.68 roles after the intervention, the results did not show statistical significant changes. Our results are similar to those of previous studies but did not reach significance, probably due to the small sample size(16).

The number of roles participants performed at present did not increase significantly either. At the beginning of the intervention the number of roles participants performed was close to the findings of McKenna et al. about the average number of roles of survivors of stroke (4.3 roles). However, although the increase was not statistically significant, after the program participants performed more roles, rising to an average of 5.14. As these authors indicate, role assumption is important in people affected by stroke because the number of roles is positively correlated with greater life satisfaction(29). Sloan et al. also used the Role Checklist to measure the changes after a community approach to participation intervention in people with brain injury. Their results showed a significant increase in the number of roles

performed at present after an intervention that lasted 12 months(30,31). This may be because giving individuals more time to explore community-valued roles can lead to an increase in their present roles.

Qualitative data also showed that, after the program, participants started engaging in new ADL as well as leisure and social participation. This issue is important because both leisure and social participation usually show a small decrease in frequency in people with brain injury (32) although there is insufficient evidence that occupation-based programs improve leisure and social participation(7).

Supports and barriers for occupational participation

Quotes showed that participants in the program increased their knowledge about supports and barriers for engagement in meaningful activities.

Participants became more aware of their own abilities. In addition, the goals they wanted to achieve in the future became clearer as well as aspects related to personal capacity and self-efficacy, within the volitive subsystem. A person who feels capable and effective can seek out opportunities, use feedback to improve performance, and persevere to achieve goals(33). A self-efficacy increase was also a significant aspect in the Lifestyle Matters program, where a lifestyle intervention was developed in aging people through specific topics and gave special relevance to putting participants' ideas into practice(34). French et al. evidenced the mediating role of self-efficacy between performance capacity and activity participation, highlighting that physical ability was not the only important requirement to participate but that self-efficacy was also needed(35). Although in the current study awareness of capacity was explored qualitatively, according to other authors(34) it would be relevant for future studies to measure self-efficacy as an outcome through a quantitative scale.

The social environment and especially the group appeared to be one of the most important supports. This was already reported by Mountain et al. in their study with an aging population. Being a member of a group leads to positive relationships, self-acceptance, and personal growth and has a huge impact on how individuals adapt their abilities to manage time, space, and social interactions(34). This was also found in a study that used a lifestyle intervention in people affected by stroke. Specifically, Lund and Melhu found that the group stimulated individuals to become active and take responsibility both for the group and for their own lives. Involvement in a group created a feeling of being forced and pushed forward to engage in a process of reflection and to participate in both the group and their everyday life(11). In the present study, realizing that they were not alone in having difficulties in a specific task gave participants the courage to overcome their difficulties.

Although the social environment was one of the greatest supports, it was also one of the most frequently documented barriers for participation. As in the present study, Hammel et al. found that not only the physical environment is relevant but that social barriers are also intimately tied to participation opportunities. If family and important others were not supportive of active engagement or operated primarily on a safety versus risk premise, participation was curtailed or stopped completely(36,37).

Limitations of the study

Several limitations should be noted in this study. The main one is sample size, so caution should be taken when making generalizations from these data. However, as happens with other group intervention studies(38), sample size is usually small when the study includes programs that last for months so that the change in the participants can be appreciated. Nevertheless, further studies using larger populations are needed to verify these findings.

Second, the groups were not fully matched at the beginning of the intervention; the intervention group had significantly lower scores on the baseline measurements than the control group. However, the absence of significant differences in the sociodemographic characteristics and the creation of the changing score variable to compare improvements partly reduced the likelihood of selection bias. Future studies should include randomization in intervention and control groups.

Finally, Ng et al. (2013) already proved that the benefits of lifestyle-oriented interventions in people with stroke remain in time so further studies should explore whether the results of the occupational self-analysis program also persist(15).

Conclusion

This occupational self-analysis program had a positive impact in people with ABI. The program helped participants to improve their health perception and increase their occupational participation through learning about their supports and barriers for engaging in meaningful activities.

Clinical messages

- The process of analyzing the supports and barriers for engaging in meaningful activities could help to people with ABI to improve their health perception.
- People with ABI could increase their occupational participation through learning about their supports and barriers for engaging in meaningful activities.
- Although the social environment was one of the greatest supports, it was also one of the most frequently documented barriers for participation of participants with ABI.
- Realizing that the participants of the present study were not alone in having difficulties in a specific task gave them the courage to overcome their difficulties.

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Table 1. Thematic guide for focus group discussions

- Activities they have included in their daily routine.
 - What strategies have you learned to be more independent in your everyday life?
 - Identify difficulties to generalize what they have learned during the program.
 - Which were the problems adapting what you learned here to your daily routine?
 - Encouragement to speak freely about whatever they think is relevant for the study, experiences during the intervention, etc.
 - Additional comments/thoughts.
-

Table 2. Comparison between the sociodemographic characteristics of the intervention and control groups

Characteristics	Intervention n=7	Control n=5	<i>p</i>-value (between groups)
Age, years, mean (range)	51.86(28-69)	56 (39-70)	0.58
Sex, n (%)			
• Female	2 (28.6)	2(40)	0.67
• Male	5(71.4)	3(60)	
Marital status, n (%)			
• Married	3(42.9)	3(60)	0.42
• Single	2 (28.6)	0(0)	
• Divorced	2(28.6)	2(40)	
Level of disability (0-100%), n (%)			
• 33%-64%	3(42.9)	0(0)	0.09
• >65%	4(57.1)	5(100)	
Origin of the ABI			
• Stroke	5(71.4)	5(100)	0.19
• Traumatic brain injury	2(28.6)	0(0)	
Years from ABI, n (%)			
• Less than 2 years	2(28.6)	1(20)	0.66
• From 2 to 5 years	3 (42.9)	2(40)	
• From 5 to 10 years	1(14.3)	2(40)	
• More than 10 years	1(14.3)	0(0)	
Living environment, n (%)			
• Family	6 (85.7)	4(80)	0.79
• Alone with professional help	1(14.3)	1(20)	

Table 3.SF-36, mean (and standard deviation, SD) scores at pretest and posttest and comparisons between groups and within groups

SF-36 subscales	Participants	Pretest (SD)	Posttest (SD)	<i>p</i> -value (within group)	Change score	<i>p</i> -value (between groups)
Physical functioning	Intervention (n=7)	25.71(33.71)	39.28(38.66)	0.33	13.57	0.80
	Control (n=5)	30.06(28.60)	28(32.71)	1.00	-2.06	
Role limitations due to physical health	Intervention (n=7)	35.71(47.55)	57.14(47.24)	0.27	21.43	0.09
	Control (n=5)	95(11.18)	70(32.59)	0.18	-25	
Role limitations due to emotional problems	Intervention (n=7)	38.09(48.79)	57.14(47.24)	0.24	19.05	0.09
	Control (n=5)	93.33(14.9)	73.33(43.46)	0.41	-20	
Energy/fatigue	Intervention (n=7)	47.14(17.99)	65(21.21)	0.028*	17.86	0.10
	Control (n=5)	63(29.28)	62(16.43)	0.85	-1	
Emotional wellbeing	Intervention (n=7)	63.42(23.82)	73.71(26.01)	0.24	10.29	0.12
	Control (n=5)	77.6(20.31)	75.2(18.41)	0.45	-2.4	
Social functioning	Intervention (n=7)	51.78(31.81)	75(26.02)	0.10	23.22	0.063
	Control (n=5)	87.5(21.65)	72.5(28.5)	0.18	-15	
Pain	Intervention (n=7)	61.42(31.11)	72.50(25.49)	0.08	11.08	0.32
	Control (n=5)	68(23)	68(27.06)	1.00	0	
General health	Intervention (n=7)	59.28(22.25)	64.28(22.44)	0.27	5	0.56
	Control (n=5)	73(13.5)	73(15.24)	1.00	0	
Physical composite	Intervention (n=7)	45.53(26.93)	58.3(28.53)	0.058	12.77	0.86
	Control (n=5)	66.51(14.96)	59.75(20.96)	0.46	-6.76	
Mental composite	Intervention (n=7)	50.11(21.27)	71.28(26.86)	0.12	21.17	0.062
	Control (n=5)	80.35(17.02)	70.75(20.25)	0.27	-9.6	

**p*<0.05

Table 4. Present and future roles, mean (and standard deviation, SD) and comparisons between groups and within groups (Intervention group=7; Control group=5)

	Participants	Pre-Test mean (SD)	Post-Test mean (SD)	Change score	<i>p</i>-value within group	<i>p</i>-value between group
Present roles	Intervention	4.42(1.39)	5.14(2.67)	0.72	0.48	0.79
	Control	5.4(1.51)	5.8(1.48)	0.4	0.15	
Future roles	Intervention	6.57(2.07)	8.00 (2.16)	1.43	0.072	0.13
	Control	7(0.7)	7(1.22)	0	1.00	

* $p < 0.05$

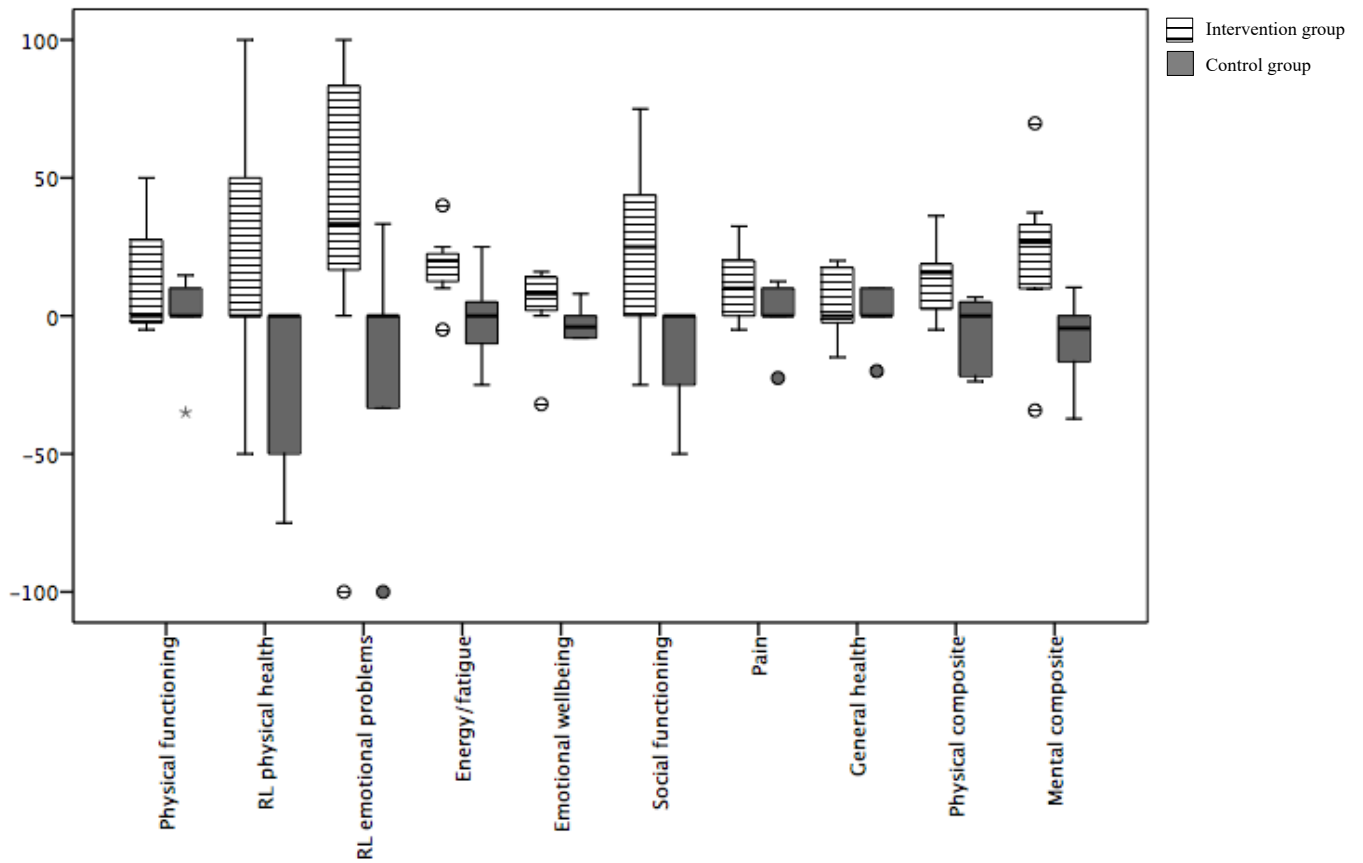


Figure 1.Changes scores of the 8 domains of the SF-36 Health Survey and of the two composites for the intervention group and the control group.

Note: RL physical health=Role limitations due to physical health; RL emotional problems= Role limitations due to emotional problems.

Asterisks (stars) represent extreme outliers. Dots represent the conjunction of more than one extreme outliers