Health Leadership and Quality of Life. 2025; 4:739
doi: 10.56294/hl2025739

ORIGINAL

Evaluation of the cognitive-behavioral program in the control of depression in people with physical disability

Evaluación del programa cognitivo-conductual en el control de la depresión en personas con discapacidad física

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Cite as: Calderón Pereira J, Tunqui Cruz RC, Alvares Olivares DM, Roa González DM, Hernández Lara P. Evaluation of the cognitive-behavioral program in the control of depression in people with physical disability. Health Leadership and Quality of Life. 2025; 4:739. https://doi.org/10.56294/hl2025739

Submitted: 13-08-2024 **Revised:** 21-01-2025 **Accepted:** 19-07-2025 **Published:** 20-07-2025

Editor: PhD. Neela Satheesh

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ABSTRACT

Introduction: attention to people with disabilities has evolved significantly in recent years, especially compared to a decade ago. International organizations and national regulations have promoted inclusion and equal opportunities for this population. In this context, the present research evaluates the impact of a cognitive-behavioral intervention program on individuals with physical disabilities experiencing depressive episodes at the Potosí Rehabilitation Center during the 2022 management year.
Method: a quantitative methodological design was employed. The Beck Depression Inventory was used to assess the impact of the intervention by comparing pretest and posttest scores. The sample included participants selected from the rehabilitation center, and 12 group intervention sessions were conducted.
Results: the results showed a Cronbach's alpha of 0,94, indicating high reliability of the instrument. A correlation between pretest and posttest scores was observed at 0,164 ($p = 0,515$). The Student's t-test revealed a t-value of $t(17) = 7,285$ with a $p < 0,0001$, indicating a statistically significant difference. Pretest scores ($x = 28,39$) significantly decreased in the posttest ($x = 8,61$).
Conclusions: the implementation of the cognitive-behavioral intervention program proved to be effective, generating a positive impact and reducing depressive episodes in individuals with physical disabilities, whether acquired or congenital.

Keywords: Cognitive-Behavioral Therapy; Physical Disability; Depressive Disorders; Psychological Intervention; Mental Health.

RESUMEN

Introducción: la atención a personas con discapacidad ha evolucionado significativamente en los últimos años, especialmente en comparación con hace una década. Organizaciones internacionales y normativas nacionales han fomentado la inclusión y la igualdad de oportunidades para esta población. En este contexto, la presente investigación evalúa el impacto de un programa de intervención cognitivo conductual en personas con discapacidad física que presentan episodios depresivos en el Centro de Rehabilitación Potosí durante la gestión 2022.

Método: se utilizó un diseño metodológico cuantitativo. Se aplicó el Inventario de Depresión de Beck para evaluar el impacto de la intervención mediante una comparación entre los puntajes del pretest y el postest. La muestra incluyó a participantes seleccionados del centro de rehabilitación, y se realizaron 12 sesiones grupales de intervención.
Resultados: los resultados mostraron un alfa de Cronbach de 0,94, indicando alta fiabilidad del instrumento. Se observó una correlación entre los puntajes del pretest y postest de 0,164 (p = 0,515). La prueba t de Student reveló un valor de t(17) = 7,285 con un p < 0,0001, lo que indica una diferencia estadísticamente significativa. Los puntajes del pretest (x = 28,39) disminuyeron considerablemente en el postest (x = 8,61).
Conclusiones: la implementación del programa de intervención cognitivo conductual demostró ser eficaz, generando un impacto positivo y reduciendo los episodios depresivos en personas con discapacidad física, tanto adquirida como congénita.

Palabras clave: Terapia cognitivo-conductual, Discapacidad física, Trastornos depresivos, Intervención psicológica, salud mental.

INTRODUCTION

In the last decade, the approach to human beings has evolved towards a bio-psycho-social model that recognizes the interrelationship between physical, mental, and social health. When one of these areas is affected, it impacts the others. For example, health problems can impair an individual's development and performance,[1] and mental health disorders, defined as the ability to cope with everyday stress, affect their emotional well-being,[2,3] Latin America is one of the regions most demographically impacted by the health crisis,[4] as outlined in a United Nations literature review in the work of Serrano and Cernaqué.[5]

The World Health Organization (WHO) has emphasized the need for an inclusive model that values human rights and promotes inclusion through intervention programs. (6) In 2001, the International Classification of Functioning, Disability and Health was published, which addresses equal opportunities and social integration.[7,8,9] The 2010 Law on Equal Opportunities and Social Inclusion for Persons with Disabilities aims to ensure the right to equal opportunities and full social inclusion, eliminating discrimination based on disability.

Céspedes pointed out that rehabilitation care has been oriented toward an inclusive approach, guaranteeing equal opportunities and non-discrimination for persons with disabilities.[10] The 2009 Constitution promotes principles such as equality, dignity, and respect, incorporating specific rights for persons with disabilities in Articles 70 to 72.[11] However, gaps remain in these regulations, especially in access to specialized mental health interventions.

It should be noted that depression is one of the most prevalent mental disorders, disproportionately affecting women. In industrialized countries, it is estimated that between 10 % and 15 % of women experience depressive episodes during pregnancy or postpartum. This figure can rise to 20 % or even 40 % in developing countries, where socioeconomic conditions and access to health care are often more limited. In this scenario, mental and neurological disorders, such as depression and Alzheimer's disease, account for a significant portion of the global burden associated with noncommunicable diseases, affecting the quality of life of those who suffer from them and impacting their family and social environments. The WHO estimates that severe depression will be one of the leading mental health complications in the coming years.[12,13]

In a report by the UN, it was noted that people with disabilities and indigenous communities are the most affected by discrimination and inequality. In addition, data published in December 2016 in Bolivia indicated that there were officially 67 912 people with some disability, of whom 57 932 had the corresponding card. Of that total, 13 132 had a physical disability.[14] Data from the Information System of the National Registry of Persons with Disabilities (SIPRUNPCD) for February 2022 concluded that the number of registered persons with disabilities rose to 95,884, of which approximately 38 % were cases of physical and motor disabilities.

In Potosí, it is estimated that more than 6,507 people live with disabilities, facing poverty and inequality. Disability is a multidimensional phenomenon that impacts quality of life, influenced by factors such as ethnicity, education, and gender. Physical disabilities represent 51 % of the population with disabilities, raising questions about support in health and education, especially in psychological intervention.

The objectives of this research focused on evaluating the impact of the cognitive-behavioral intervention program on people with physical disabilities and depressive episodes at the Potosí Rehabilitation Center in 2022. The specific objectives include: a) to develop a cognitive-behavioral program to improve cognitive, emotional, and behavioral functions; b) to characterize the impact of the intervention according to gender and age; and c) to characterize the impact on people with acquired and congenital disabilities.

Given the challenging landscape faced by people with physical disabilities and depressive episodes, it is essential to offer specialized therapeutic services. Having psychologists in the health system is crucial to

providing comprehensive treatment. The research seeks to understand the affective-emotional consequences and provide psychological intervention appropriate to the local context.

Treatment programs that integrate psychological variables have been shown to improve subjective well-being and quality of life significantly. The combination of physical rehabilitation techniques with cognitive-behavioral approaches is promising.[15,16,17] The research addressed a critical problem that affects emotional and personal development.

For all these reasons, this research justifies the need to investigate further the effectiveness of cognitive-behavioral intervention programs applied to people with physical disabilities and depressive episodes at the Potosí Rehabilitation Center. This study proposed implementing a cognitive-behavioral intervention program for users with physical disabilities diagnosed with depressive episodes at the Potosí Rehabilitation Center. The aim was to determine the effectiveness of the intervention in managing depression. The research problem was formulated as follows: What is the impact of implementing a cognitive-behavioral program to manage depression in people with physical disabilities at the Potosí Rehabilitation Center during the 2022 management period?

METHOD

The research adopted a mixed approach, integrating qualitative and quantitative methods in all stages of the study, to evaluate the impact of Cognitive Behavioral Therapy (CBT) on people with physical disabilities who experience depressive episodes. The design was pre-experimental, without a control group, using a pre- and post-test scheme, applied during 2022 at the Potosí Rehabilitation Center.

A non-probability convenience sample was used, selecting participants who met the inclusion criteria and were available at the time of the intervention within the municipality. The population consisted of 20 people with physical disabilities and a clinical diagnosis of depressive episodes (it started with 20 participants, of whom two dropped out, resulting in a 10 % dropout rate). The inclusion criteria were: having a physical disability (whether congenital or acquired), a medical diagnosis of depressive episodes, a valid disability card, and being between the ages of 20 and 60. Those who did not meet these requirements were excluded.

The Beck Depression Inventory (BDI)[18] was used as the main instrument for data collection. This standardized questionnaire, widely validated in the clinical setting, assesses the intensity of depressive symptoms using a self-report scale with scores that allow for the classification of depression levels. It was administered at two points in time: before and after the CBT intervention, to compare and analyze changes in depressive symptoms. In addition, an observation sheet was used as a complementary qualitative technique to record behavioral aspects during the sessions.

The data obtained were processed using descriptive statistics, using tools such as Microsoft Excel and SPSS version 25 software. The results will be presented in tables and figures to facilitate interpretation and comparative analysis.

In terms of ethical considerations, the study respected the principles of confidentiality, voluntariness, and autonomy of the participants. All those involved signed an informed consent form after receiving a detailed explanation of the objectives, procedures, benefits, and possible risks of the study. The research was approved by the relevant institutional committee and was conducted by national and international ethical guidelines for studies involving human subjects.

RESULTS

The intervention consisted of 12 cognitive-behavioral therapy sessions, each lasting 90 to 120 minutes. In terms of demographics, the participants were divided into five men and thirteen women. Regarding marital status, 66,7 % were single, while 33,3 % were married, widowed, or divorced. Most of the participants (more than 80 %) were engaged in housework, with 16,7 % identifying themselves as professionals.

The people who participated in this study had acquired disabilities (55,6 %) compared to congenital disabilities (44,4 %).

Table 1. Demographic Aspects. Degree of Disability

Degree of disability		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	Moderate disability	5	27,8	27,8	27,8
	Severe disability	4	22,2	22,2	50,0
	Very severe disability	9	50,0	50,0	100,0
	Total	18	100,0	100,0	

In terms of degree of disability, half of the participants had a very severe degree of disability, followed by

moderate disability with 27,8 % and finally severe disability with 22,2 %.

According to the study results, the incidence of these symptoms was 25,75 % (95 % CI: 24,70–26,80). In addition, compared to people without restrictions in instrumental activities, a 68 % increase in the risk of developing depressive symptoms was identified (95 % CI: 1,10–2,57; p = 0,015). These data underscore the need for comprehensive interventions that address both disability and its emotional implications.

In the application of the pre-test, about reliability, it can be noted that the validity criteria are met for several 21 indicators, being valid or acceptable as expressed by an excellent level of reliability according to Cronbach's alpha of 0,904. Regarding the post-test results, it should be noted that, as a result of the presence of intermittent variables unrelated to the research, there were two cases of absence, with the following result in the post-test reliability in Cronbach's alpha, where the results show 0,85, with the conclusions of reliability being reasonable in terms of internal consistency.

The Student's t-distribution applied to the mean hypothesis shows that it meets the applicability criteria, as the population is less than 30, with the results between the null hypothesis and the alternative hypothesis validating the intervention carried out.

Table 2. T-test

Paired sample statistcs		Mean	N	Standar deviation	Standar error mean
Pair 1	Total pretest	28,39	18	10,993	2,591
	Total Posttest	8,61	18	5,689	1,341

Table 3. Correlation of paired samples

Correlations of paired samples		N	Correlation	Sig.
Pair 1	Total Pretest & amp; Total Posttest	18	0,164	0,515

The correlation between the pre-test and post-test scores is very low, and the p-value allows us to conclude that there is no significant correlation between the two scores. This means that not all elements of the sample decreased their scores in similar proportions.

Table 4. Application of paired sample test

Paired sample test		Paired differences					t	gl	Sig. (bilateral)
		Mean	Standard deviation	Standard error mean	95 % confidence interval of the difference				
					Lower	Upper			
Pair 1	Total pretest - Total posttest	19,778	11,518	2,715	14,050	25,505	7,285	17	0,000

The value of Student's t-statistic (17) =7,285 with a p-value < 0,0001, therefore, $H_{(0)}$is rejected and it is concluded that there is a statistically significant difference between the pretest scores (x =28,39) and the posttest scores (x=8,61), detecting a considerable decrease in the mean as shown in table 4.

The figure shows the individual performance of each subject in both tests, with the blue line representing the results of the pre-test and the green line representing the results of the post-test. Only subject 10 showed no decrease in their score, while the others exhibited decreases, with some being very considerable, such as subjects 16 and 20, and others decreasing slightly, such as subject 5.

This figure clarifies the fact that the correlation between the two tests was low, as not all subjects decreased in the same proportion. These aspects indicate that the null hypothesis is rejected, validating the researcher's hypothesis and demonstrating a decrease in the mean of the pre-test results compared to the post-test results after the implementation of the intervention strategies.

The value identified in the ANOVA test is F(2)= 0,051 with an associated p-value = 0,950. Therefore, H0is not rejected, and it is concluded that there are no statistically significant differences between the means of the three groups analyzed in the pre-test. Given that the confidence interval is assumed to be 95 % as standard, it is possible to point out that they correspond, with no significant difference in their responses. However, in the pre-test, the difference between severe disability and moderate disability would show a balanced result between their responses. In all of them, the hypothesis test is rejected. In other words, it is possible to point out that in table, moderate disability is not closely related to severe disability (0,20), but it is related to very severe disability (1,75). The level of significance is 1,00.

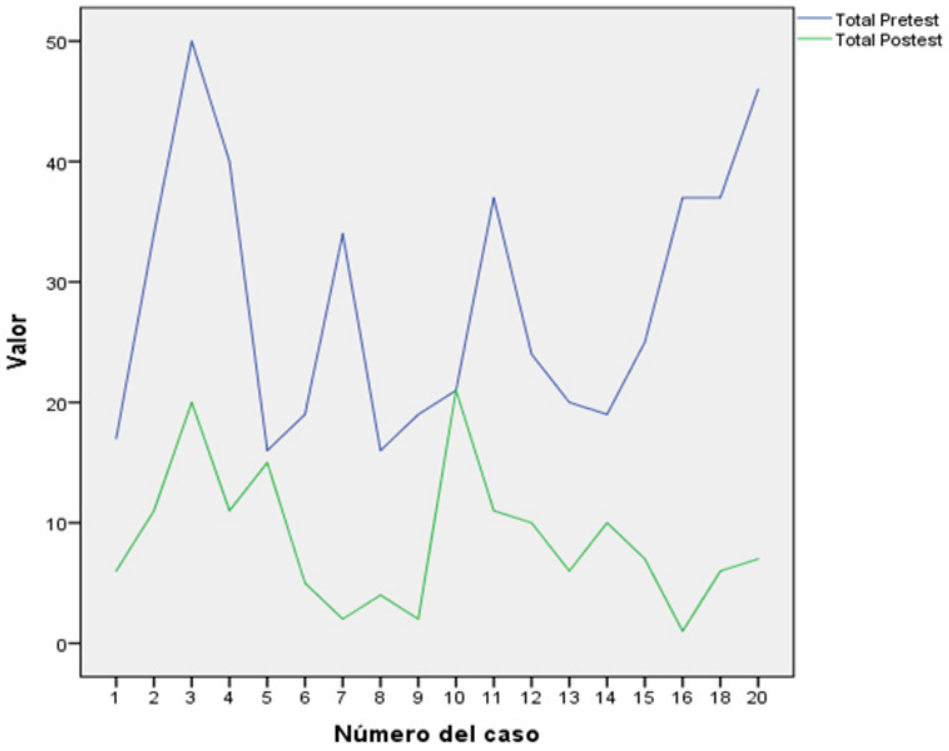

Figure 1. Test correlation

In this homogeneous subset of the pre-test, the results show a relative difference between the presence of moderate and severe depression and the presence of very severe depression. This aspect will be considered in the difference in results with the post-test.

The $F_{(2)}$value is 1,602 with an associated p-value of 0,234. Therefore, H0is not rejected, and it is concluded that there are no statistically significant differences between the means of the three groups analyzed in the post-test.

DISCUSSION

The study was carried out with people with disabilities associated with the DIVERTAD group in Potosí, Bolivia. According to data from the Bolivian Ministry of Health, most people with disabilities are unemployed, reflecting a low labor force participation rate.

This implies, albeit to a slight extent, that people with acquired disabilities tend to suffer from depression more than people who have had disabilities since birth, a situation that is considered a risk factor that is not effectively addressed in the national context, in terms of the degree of disability.

It should be noted that the degree of disability is based on a transdisciplinary assessment (medical, psychological, and social work) carried out by a team under the Ministry of Health, which assigns a percentage of disability according to pre-established parameters.

Therefore, the greater the degree of disability, the more likely the presence of symptoms of depression. This aspect corresponds to research carried out in Mexico, which concludes that "limitations in daily life are an important risk factor for the development of clinically significant depressive symptoms in people followed up for two years".[19]

The figure shown in the results presents the individual performance of each participant in the two assessments: the pretest, represented by a blue line, and the posttest, indicated by a green line. In this analysis, it can be seen that subject 10 is the only one who did not experience a decrease in their score between the two tests. In contrast, all other participants showed reductions in their scores, with significant variations. For example, subjects 16 and 20 show a considerable decrease, while subject 5 experienced a milder reduction.

This figure clearly illustrates the low correlation between the results of both tests, suggesting that not all participants responded uniformly to the intervention. This observation supports the rejection of the null hypothesis. It validates the research hypothesis, corroborating that there was a statistically significant decrease in the mean pretest scores compared to the posttest scores, which is attributed to the implementation of the intervention strategies.

In the posttest results and after the application of the intervention strategies, it is possible to point out the difference between the results of the three groups, particularly Moderate Disability and Severe Disability, and

a relative difference about Very Severe Disability, maintaining a level of significance in which the hypothesis is accepted. It is possible to highlight the importance of the results, particularly in comparison to the pretest, where there is no significant difference in their responses. A considerable variation was obtained in the differentiated results.

In the homogeneous posttest subset, the results show a relative difference between the presence of moderate depression and severe and very severe depression. This indicates a significant difference in the presence of very severe depression. This aspect is reflected in the difference in results with the posttest.

Although in recent years the World Health Organization (WHO) has shown a growing interest in promoting awareness and inclusion of people with disabilities, there is still a notable lack of scientific research with a quantitative approach that addresses this population, particularly about the psychological adjustment process after acquiring a disability.

This shortcoming has been pointed out by MacLachlan and Marts,[20,21] and is also confirmed by a review of various scientific databases. This information deficit may be linked to what the WHO (2020) itself warns: in some countries, disability is not treated as a priority on the public health agenda, which limits the generation of evidence and the development of effective policies. This lack of attention has a direct impact on the training of health personnel, who in many cases do not have the necessary tools to address the psychological well-being of persons with disabilities, which in turn increases the vulnerability of this population to situations of exclusion or systematic neglect.

Therefore, based on the above, this study highlights the complexity of addressing the mental health of people with disabilities, especially in the context of their marital and occupational status.[12,19,22] Most participants were single (66,7 %), which could influence their emotional well-being and the prevalence of depressive symptoms. This relationship suggests that social support and interpersonal relationships are crucial factors in the mental health of this population,[23] an aspect that deserves attention in future research.

Furthermore, the scarcity of quantitative studies focusing on disability and mental health highlights a significant gap in the scientific literature. Despite the WHO's efforts to promote inclusion, many countries still do not consider disability a public health issue,[24,25] which translates into a lack of training for health personnel to address the emotional needs of these individuals effectively.[26,27,28] This situation can contribute to people with disabilities feeling even more vulnerable and isolated.

Cognitive-behavioral intervention proved effective in reducing depressive symptoms, although it is essential to recognize that the response to therapy was not uniform among all participants. This indicates the need to personalize interventions and consider individual factors such as the type and degree of disability. Fostering spaces for care and emotional support is crucial to improving the quality of life of people with disabilities, [22] promoting their inclusion and well-being in society.[29,30] Generating benefits in different scenarios and influences, as shown in the example of the results of Bustinza and Lacuta.[31]

CONCLUSIONS

In response to the first specific objective, the development of the cognitive behavioral intervention program adapted to people with physical disabilities who experience depressive episodes proved to be a significant advance in addressing the particularities of this group. Based on Aaron Beck's model, the program considered both congenital and acquired disabilities and structured extensive sessions that allowed for a focused approach to the emotional and cognitive needs of the participants. This suggests that the intervention can be a valuable tool for improving psychological well-being. However, the presence of uncontrolled external variables points to the need for a multidimensional approach and constant monitoring to optimize results.

Regarding the second objective, the characterization of the impact according to sex and age revealed significant differences that guide the personalization of treatment. The predominance of female participants and their better ability to cope with disability compared to men indicate the importance of designing gender-sensitive interventions. In addition, the higher prevalence of depression in women highlights the need for comprehensive strategies that address psychosocial and cultural factors that may influence their mental health and well-being. Thus, cognitive behavioral intervention should be integrated with complementary supports to enhance its effectiveness across different demographic profiles.

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FUNDING

The authors did not receive funding for the development of this research.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHOR CONTRIBUTION:

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https://doi.org/10.56294/hl2025739 ISSN: 3008-8488