

Original Article

Spiritual Intelligence, Coping Strategies, as Correlates of Adaptation to Disability among Individuals with Limb Amputations

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Abstract

Objective: The purpose of this study was to understand the relationship between Spiritual Intelligence, coping with disability, and adaptation to disability among individuals with a history of limb amputation.

Study Design: A analytical cross-sectional correlational study was conducted.

Place and duration of study: The present study was conducted at the Artificial Limb Centre (ALC), Fauji Foundation Hospital, Rawalpindi, Pakistan, from 28th November 2022 to 02nd January 2023.

Material and Methods: There were 385 patients with amputation of their limbs. For this analytical cross-sectional correlational study by using a purposive sampling technique, a non-probability sampling method, was used in the study. Participants aged 15 years and above with either unilateral or bilateral amputation of the upper and lower limbs were part of the study. A Demographic form was used to collect the data, and the Psychological tools were the Spiritual Intelligence Self-Report Inventory (SISRI-24), Coping with Disability Difficulties Scale (CDDS), and Adaptation to Disability Scale Revised (ADS-R). The collected data were then analyzed with SPSS Statistics Version 27.0 (IBM) software. The descriptive statistics and Pearson's product-moment correlation analysis were used.

Results: Spiritual intelligence was found to have a significant positive correlation with coping with disability ($r = .262, p < .001$), spiritual intelligence with adaptation to disability ($r = .311, p < .001$), and coping with disability with adaptation with disability ($r = .151, p = .003$). Positive thoughts had a significant positive relationship with adaptation to disability while avoidance coping had a significant negative relationship with adaptation.

Conclusion: There were positive correlations between the independent variables of spiritual intelligence and coping strategies, and spiritual intelligence with adaptation to disability for those who suffered from amputation of the limbs. Adaptation was related to positive coping strategies and avoidance coping to poor adaptation.

Keywords: Adaptation to disability, coping with disability, Limb amputation, Rehabilitation, Spiritual intelligence.

1. Introduction

There are complex factors that contribute to disability, which is the result of a health condition and contextual factors, and may result in impairments, activity limitations, and restrictions on participation (World Health Organization).⁽¹⁾ It's a big public health and human rights problem with a health, function, social participation, and quality of life component to it. WHO (2023) estimates that 16% (or 1.3 billion) of the world's population live with severe disability, particularly in low- and middle-income countries where there is a lack of access to healthcare, rehabilitation,

education, and employment. Similarly, the Global Burden of Disease Study 2021 by the World Health Organization (WHO) showed that disability contributes considerably to the burden of disease in terms of Years Lived with Disability (YLDs), and rehabilitation measures that account for both physical and psychosocial functioning are important (Institute for Health Metrics and Evaluation).⁽²⁾ The following areas still pose difficulties for individuals with disabilities in Pakistan and negatively impact their quality of life: Healthcare,

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Amputation of the limbs is one of the most significant issues for acquired physical disabilities and can affect mobility, functional independence, body image, social participation, and quality of life. Traumatic injuries, diabetes mellitus, peripheral arterial disease, malignancies, congenital abnormalities, severe infections, and conflict-related injuries are causes of amputation.

⁽⁴⁾ In Pakistan, the reported causes of injuries are conflict-related injuries, traumatic injuries, diabetes-related injuries, and the need for comprehensive and multidisciplinary rehabilitation services. ^(5,6) The modern approach to rehabilitation is not only about restoring function and providing a prosthesis, but also about psychological adaptation, reintegration into the activities of daily living, and reintegration into the family, work, and community environment. ⁽⁴⁾

The psychological effects of limb amputation may also be a barrier to rehabilitation and adjustment. Amputation can cause depression and anxiety, symptoms of post-traumatic stress disorder (PTSD), emotional distress, body image changes, loss of self-esteem, decreased quality of life, and phantom limb syndrome, particularly following traumatic amputation. ⁽⁷⁾ These emotional and psychological difficulties may impede prosthesis use, rehabilitation, and functional recovery. ⁽⁸⁾ Therefore, psychological mechanisms of coping with the implications of the loss of a limb should also be taken into account for rehabilitation. ⁽⁴⁾ Adapting to a limb loss is a major psychological process in the rehabilitation of a person who has lost a limb.

Adaptation is a continuous cognitive, emotional, and behavioral process where an individual adapts to functional losses and changes due to disability. Adaptation is not a resignation to loss, but rather a reconstruction of personal values, formation of new perspectives, creation of meaning, and a living

life productively and meaningfully despite the physical disability (9). The theory of disability acceptance by Wright also suggests that the successful adjustment to disability entails a new focus from the loss of a body part to the use of remaining abilities and possibilities, and consequently a re-evaluation of personal values and goals of living in the light of disability. ^(10,11) Adaptation is therefore an important rehabilitation outcome as it involves psychological, physical and social adjustment of the person to disability. Previous studies have correlated successful adjustment after amputation with higher levels of satisfaction with the prosthesis, improved quality of life, and psychosocial adjustment and reduced psychological distress. ^(4,12)

How people perceive and cope with the demands of limb loss will affect the process of adaptation. Coping involves cognitive and/or behavioral strategies in which one attempts to deal with demands that are deemed stressful and/or in excess of one's resources. ⁽¹³⁾ People who have had a limb removed need to adjust to having a missing limb, the physical changes in their body, how they will live their lives, the emotional impact, the social implications, and how life will be in the future. Therefore, coping strategies can be important factors in the way people respond to the impact of a limb loss. Adaptive coping responses have been related to the positive outcomes of psychological well-being and rehabilitation, ^(8,14,15) while avoidance, denial and behavioral disengagement have been associated with higher psychological distress, psychosocial difficulties and poorer rehabilitation involvement. Coping therefore is a possible psychological process by which people deal with the stress of being an amputee and make positive changes to adjust to being a person with a disability.

Psychological resources, along with coping strategies, can be especially significant in coping with adjustment after limb loss. One of these is spiritual intelligence. For King (2008), spiritual intelligence refers to a set of mental abilities that allow persons to work with existential concerns, to build a personal meaning from these concerns, to make sense of transcendent aspects of experience, and to consciously enter into spiritual states. It includes Critical Existential Thinking, Personal Meaning Production, Transcendental Awareness, and Conscious State Expansion (16). These capacities might be applicable to people going through significant life changes, as they can help to reflect on stress, make meaning, and develop adaptive perspectives. There is a relationship between higher spiritual intelligence and less stress perception and more resilience; when people face difficult or stressful situations, spiritual intelligence can be interpreted as a psychological resource. ^(17,18)

The potential relevance of spiritual intelligence could be even more significant after losing a limb, when people might have to re-create their sense of identity, sense of meaning, values, and goals due to a major alteration in their physical body. Coping and psychological adaptation to disability may be further enhanced by an ability to find meaning in adversity and to increase psychological flexibility. ^(4,9) Coping resources, however, are conceptually distinct and complementary psychological resources, as is spiritual intelligence. Coping involves how we deal with the 'how' aspects of stressful situations (practical and emotional), and spiritual intelligence involves our capacities for existential reflection, making sense, and interpreting challenging situations. Therefore, a study of both might offer a wider range of insight into the psychological aspects of adaptation after amputation of a limb.

While there is strong evidence that psychological problems and challenges occur after the acquisition of a limb, and that adaptation is a central part of rehabilitation, far less was known with respect to the psychological resources that can be used to support such adaptation. Specifically, there is little research investigating the relationship among coping, spiritual intelligence, and adaptation to disability among people with a lower limb amputation. Previous studies have separately examined the relationship between coping and psychological adjustment and rehabilitation outcomes, and spiritual intelligence as a potential buffer to stress and resilience, but it remains unclear how these factors relate to adaptation after an amputation involving the lower limbs. This gap is especially pertinent in the Pakistani context where people with limb loss may face extra hurdles in accessing rehabilitation, social integration, and psychosocial adaptation in the longer term. ^(3,5,6) Hence, the present study was planned to examine the correlation between coping, spiritual intelligence, and adaptation in people with limb amputation. The study will focus on these psychological factors in combination to learn more about psychological adaptation processes after loss of a limb, and to have evidence on which to base psychosocial rehabilitation elements. From existing theoretical and empirical literature, it was hypothesized that coping would be significantly related to adaptation to disability and that spiritual intelligence would be related to adaptation to disability among people with limb amputation.

2. Materials & Methods

Ethical Issues and Management Approval. To collect the data, permission was taken from the Department of Psychology, Capital University of Science and Technology (CUST), Islamabad, in the form of a research permission letter dated

October 5, 2022 (Ref. CUST/IBD/PSY/Thesis-170). Permission was then granted to collect data at the ALC, Fauji Foundation Hospital (FFH), and Rawalpindi on 28/11/2022 (Case No. 6034/2/Adm-1). The data collection was done from November 28, 2022 to January 2, 2023. The purpose and voluntary nature of the study was explained to the participants, and informed consent was solicited prior to participation in the study.

Inclusion Criteria

The study included people aged 15 years and older who had one or both arms and legs amputated either from trauma or non-traumatic causes. Male and female participants (primary and secondary amputees) were eligible for participation. People from all over Pakistan who were receiving rehabilitation services for their injured limbs at the Artificial Limb Centre, Fauji Foundation Hospital, either civilian or military, having war-related amputation were considered for the study, provided they met the inclusion criteria set for the study.

Exclusion Criteria

Those whose cognitive function was impaired, complete physical disability, and those who had more than two amputated limbs were not included in the study. These included people who were bilaterally amputated (those with an amputation on both legs and/or both arms). Children who had had an amputation were also not included. Using a purposive sampling method, 385 individuals with a history of limb amputation were recruited, based on inclusion and exclusion criteria.

Data Collection Process

The primary investigator personally met the eligible persons visiting the rehabilitation centre during the data collection period with prior

permission from the Department of Psychology, Capital University of Science and Technology (CUST), Islamabad, and Administrative permission from the Artificial Limb Centre (ALC), Fauji Foundation Hospital (FFH), Rawalpindi. Participants were oriented to the aim and goal of the study, and they signed informed consent forms before participating. The questionnaires were then sent home with the participants to be completed. Participants who needed help reading and/or writing were helped by the primary investigator but were not affected in their responses. The filled questionnaires were then retrieved and checked for completeness for data entry.

Data Collection Tools

The study tool, outlined in four sections, covered various aspects. Demographic and clinical data collected in the first part included age, sex, marital status, education level, province of residence, job status before and after the amputation, prosthesis status, living status, level and type of amputation, cause of amputation, disability period, phantom pain or sensation, and activities of daily living.

The second section measured spiritual intelligence using the Spiritual Intelligence Self-Report Inventory (SISRI-24) that was developed by King (2008). The instrument is made up of 24 items categorized into four dimensions: Critical Existential Thinking (7 items), Personal Meaning Production (5 items), Transcendental Awareness (7 items), and Conscious State Expansion (5 items). The answers are scored on a 5-point Likert scale (0 = Not at all true of me; 4 = completely true of me). The total scores from 0 to 96 represent a higher score as higher spiritual intelligence (King, 2008). The value of Cronbach's α for the SISRI-24 in the present study was excellent $\alpha = .94$. The third section measured coping with disability with the

Coping with Disability Difficulties Scale (CDDS) (Author, Year). The CDDS consists of 17 items divided into four dimensions: Positive Thinking (6 items), Social Sensitization and Support (4 items), Adaptation (3 items), and Avoidance (3 items). Items are answered on a 4-point Likert scale that is composed of Never or Rarely and Always or Almost Always. Scores higher than the mean reflect more use of the coping strategy (Author, Year). The overall CDDS had an acceptable level of internal consistency in this study (Cronbach's $\alpha = .71$). The fourth section evaluated the adaptation to disability with the Adaptation to Disability Scale – Revised (Author, Year). The ADS-R consists of a total of 32 items with a distribution over four dimensions: Containment of Disability Effects contains 9 items; Transformation from Comparative Values to Asset Values contains 9 items; Enlargement of Scope of Values contains 9 items; Subordination of Physique contains 5 items. Items are rated using a four-point Likert scale; where applicable, they are reverse-scored. The total scores range from 32 to 128, with higher scores representing a better adaptation to disability (Author, Year). The internal consistency of the ADS-R was good in the present study (Cronbach's $\alpha = .83$).

Data Analysis

The Statistical Package for the Social Sciences (SPSS, Version 27.0) was used for data analysis. Means with standard deviations (SDs) were used to describe continuous variables, and frequencies and percentages were used to describe categorical variables. The internal consistency of the study instruments was evaluated by the Cronbach alpha coefficient. Skewness and kurtosis statistics were used to check the normality of the continuous variables. Because of the near-normal distribution of the data, the relations between spiritual

intelligence, coping with disability, and adaptation to disability were analyzed with Pearson's product-moment correlation analysis. $P < .05$ was considered statistically significant.

3. Results

The study included 385 people who had limbs amputated, meeting the inclusion criteria. Participants were people with unilateral and bilateral upper- and lower-limb amputations, caused by both traumatic and non-traumatic events. Participants' general demographic data are provided in Table 1, and their clinical data are provided in Table 2. Table 1

Demographic characteristics of study variables (N=385)

Variable	Category	n	%
Age Group			
	Below 50 years	195	50.6
	Above 50 years	190	49.4
Gender			
	Male	282	73.2
	Female	103	26.8
Marital status			
	Single	162	42.1
	Married	169	43.9
	Widow/widower	34	8.8
	Divorced	20	5.2
Education Level			
	No formal education	47	12.2
	Primary	57	14.8
	Middle	102	26.5
	Matric	112	29.1
	Intermediate	62	16.1
	Bachelor's and above	5	1.3

Province of residence			
	Punjab	191	49.6
	Khyber Pakhtunkhwa	83	21.6
	Azad Jammu & Kashmir	52	13.5
	Sindh	30	7.8
	Baluchistan	15	3.9
	Islamabad Capital Territory	11	2.9
	Gilgit Baltistan	3	0.8
Living Status			
	Alone	114	29.6
	With family	271	70.4
Employment before Amputation			
	Employed	306	79.5
	Unemployed	79	20.5
Employment status After Amputation			
	Employed	195	50.6
	Unemployed	122	31.7
	Employed with a job of a different nature	68	17.7
Current employment status			
	Employed	207	53.8
	Unemployed	178	46.2

Note. n= no. of study characteristics, %= percentage

General demographic characteristics of the participants are shown in Table 1. A total of 385 people with limb amputation participated in the study; almost half of the participants (49.4%) were aged 50 years and older, while 50.6% were below 50 years. The gender distribution of the respondents showed that the majority (73.2%) were males, and the rest (26.8%) were females.

Most of the participants were married (43.9%), and the second most were single (42.1%). In terms of education, 29.1% of the respondents completed matric, 26.5% went to middle-level education, and only 1.3% had a Bachelor of Education or higher. According to the survey, almost half of the respondents belonged to the province of Punjab (49.6%), followed by Khyber Pakhtunkhwa (21.6%) and Azad Jammu and Kashmir (13.5%). Most of them (70.4%) live with their families. Pre-amputation, 79.5% were employed, post amputation 50.6% retained their pre-amputation job or position, 17.7% had a different job/position, and 31.7% were not working. A total of 53.8% of the respondents were working at present.

Table 2

Clinical characteristics of the study variables (N=385)

Variable	Category	n	%
Prosthesis Status			
	Primary	126	32.7
	Secondary	259	67.3
Level of Amputation			
	Upper extremity	50	13.0
	Lower extremity	335	87.0
Laterality of Amputation			
	Unilateral (Right)	140	36.4
	Unilateral (Left)	204	53.0
	Bilateral	41	10.6
Cause of Amputation			
	Surgical	170	44.2
	War wounded	104	27.0

Duration of disability	Road traffic accident	72	18.7
	Gunshot injury	23	6.0
	Frost bite	16	4.2
	<10 years	105	27.3
	≥10 years	172	44.7
	10-20 years	55	14.3
	20-30 years	29	7.5
	30-40 years	15	3.9
Phantom Pain/ sensation	40-50 years	8	2.1
	>50 years	1	0.3
	Yes	143	37.1
	No	242	62.9
Activities of daily living	Dependent	92	23.9
	Partially dependent	157	40.8
	Independent	136	35.3

Note. n= no. of study characteristics, %= percentage

The clinical features of the participants are summarized in Table 2. The majority (67.3%) were secondary prosthesis users, and the majority (32.7%) were primary prosthesis users. Most (87.0%) had amputations in their lower limbs, with 53.0% having a unilateral amputation of the left leg, and 10.6% having bilateral amputations. The majority of participants (57.1%) were determined to have a non-traumatic amputation, and 42.9% had a traumatic amputation. Surgical causes (44.2%) were the leading cause of amputation, followed by war-related injuries (27.0%), road traffic accidents (18.7%), gunshot injuries (6.0%), and frostbite (4.2%). As for the length of time the

participants had been living with amputation, 44.7% had been living with amputation for 10 years or more, which meant that there were a relatively large number of long-term amputees. In addition, 37.1% of the participants had phantom pain sensation, while 62.9% did not have phantom pain or sensation. For functional independence, 40.8% were partially independent in activities of daily living, 35.3% were independent, and 23.9% were fully dependent.

Table 3

Psychometric properties of the study instrument (N=385)

Measure		n	M	SD	α	Potent ial Range	Actual Range
Spiritual Self-Report (SISRI-24)	Intelligence Inventory	24	72.15	16.09	.94	0-96	3-96
Critical Thinking	Existential	7	21.14	5.10	.80	0-28	0-28
Personal Production	Meaning	5	15.47	3.75	.85	0-20	0-20
Transcendental Awareness		7	20.40	4.75	.73	0-28	3-28
Conscious State Expansion		5	15.15	4.14	.81	0-20	0-20
Coping with Disability Difficulties Scale (CDDS)		17	51.15	6.55	.70	17-68	32-67
Positive Thinking		6	19.54	2.93	.67	6-24	9-24
Social Sensitization & Support		4	11.93	2.47	.49	4-24	6-16
Adaptation		3	9.37	2.00	.53	3-12	3-12
Avoidance		3	7.71	1.90	.20	3-12	3-12
Adaptation to Disability Scale-Revised (ADS-R)		32	83.33	12.83	.83	32-128	50-121
Containment of Disability Effects		9	19.76	5.06	.78	9-36	8-32

Transformation from Comparative Values to Asset Values	9	23.13	3.34	.65	9-36	14-33
Enlargement of Scope of Values	9	27.62	4.16	.63	9-36	12-35
Subordination of Physique	5	10.84	3.04	.55	5-20	5-20

Note. n = sample size; M = mean; SD = standard deviation; α = Cronbach's alpha coefficient.

The psychometric properties of the study instruments are shown in Table 3. The internal consistency of the Spiritual Intelligence Self-Report Inventory (SISRI-24) was excellent (α = .94), and the subscales had good reliability coefficients ranging from .731 to .851. The Personal Meaning Production subscale had the highest reliability (α = .851), followed by Conscious State Expansion (α = .818), Critical Existential Thinking (α = .803), and Transcendental Awareness (α = .731). The internal consistency of the Coping with Disability Difficulties Scale (CDDSD) was acceptable (α = .709). The subscales of Positive Thinking were the most reliable (α = .670), while Social Sensitization and Support (α = .490), Adaptation (α = .530), and Avoidance (α = .200) were relatively less reliable. Internal consistency was good for the Adaptation to Disability Scale – Revised, α = .830. The subscores of Containment of Disability Effects had the highest reliability (α = .783), while Transformation from Comparative Values to Asset Values had a reliability of α = .656, Enlargement of Scope of Values had a reliability of α = .630, and Subordination of Physique had a reliability of α = .558.

Table 4

Pearson product-moment correlation among spiritual intelligence, coping with disability, and adaptation to disability (N=385).

Variable	1	2	3
1. Spiritual Intelligence	-		
2. Coping with disability	.26**	-	
3. Adaptation to disability	.31**	.15**	-

Note. * = $p < .05$ (two-tailed); ** = $p < .01$ (two-tailed).

Table 4 shows that spiritual intelligence, coping with disability, and adaptation to disability were significantly positively correlated with each other. There was a significant positive correlation between spiritual intelligence and coping with disability ($r = .262$, $p < .001$) that showed that the participants with high spiritual intelligence tended to have more effective coping strategies. Likewise, a significant positive correlation was found between spiritual intelligence and adaptation to disability ($r = .311$, $p < .001$), indicating that high spiritual intelligence had a positive relationship with psychological adaptation to disability. In addition, adaptation to disability was positively related to coping with disability ($r = .151$, $p = 0.003$). The relationship was weak but statistically significant, with participants reporting greater adaptation to disability with increasing levels of adaptive coping. The overall results confirmed the study hypothesis that there is a positive relationship between spiritual intelligence, coping with disability, and adaptation to disability among persons with limb amputation.

Table 5

Pearson Product-Moment Correlations among Spiritual Intelligence, Coping with Disability, Adaptation to Disability and Their Subscales (N=385)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. SISRI	-														
2.CET	.92**	-													
3.PMP	.88**	.77**	-												
4.TA	.91**	.77**	.73**	-											
5.CSE	.90**	.76**	.74**	.77**	-										
6.CDDS	.26**	.21**	.29**	.19**	.26**	-									
7.PT	.34**	.29**	.35**	.27**	.34**	.80**	-								
8.SSS	.10*	.09	.11*	.07	.10*	.73**	.40**	-							
9.AD	.23**	.15**	.23**	.21**	.25**	.69**	.51**	.32**	-						
10.AV	-.13*	-.08	-.07	-.16**	-.13**	.28**	-.05	.13**	-.07	-					
11.ADSR	.31**	.26**	.28**	.30**	.26**	.15**	.30**	.06	.18**	-.27**	-				
12.CDE	.24**	.20**	.22**	.25**	.21**	.07	.20**	.04	.10*	-.23**	.89**	-			
13.CV	.14**	.10*	.15**	.15**	.12*	.09	.16**	.02	.16**	-.16**	.65**	.53**	-		
14.ESV	.23**	.20**	.23**	.20**	.18**	.21**	.31**	.07	.17**	-.11*	.44**	.16**	.18**	-	
15.SP	.13*	.11*	.11*	.14*	.08	.03	.09	.68**	.04	-.16**	.56**	.51**	.29**	-.13*	-

Note. SISRI = Spiritual Intelligence Self-Report Inventory; CET = Critical Existential Thinking; PMP = Personal Meaning Production; TA = Transcendental Awareness; CSE = Conscious State Expansion; CDDS = Coping with Disability Difficulties Scale; PT = Positive Thinking; SSS = Social Sensitization & Support; AD = Adaptation; AV = Avoidance; ADSR = Adaptation to Disability Scale-Revised; CDE = Containment of Disability Effects; CV = Transformation from Comparative Values to Asset Values; ESV = Enlargement of Scope of Values; SP = Subordination of Physique.

$p < .05$ (two-tailed); $p < .01$ (two-tailed).

Pearson product-moment correlation coefficients for total scores and subscales of spiritual intelligence and coping with disability and adaptation to disability are presented in Table 5. Results showed that the total spiritual intelligence score was significantly correlated with total coping with disability ($r = .262$, $p < .001$) and total adaptation to disability ($r = .311$, $p < .001$). All four dimensions of spiritual intelligence had positive relationships with the total score of adaptation to disability, and the best relationship was for Transcendental Awareness ($r = .308$, $p < .001$). Of

the coping dimensions, Positive Thinking demonstrated the highest positive correlation with the total adaptation to disability ($r = .300$, $p < .001$), and was also positively correlated with the subscales of coping, with the highest correlation found with Enlargement of Scope of Values ($r = .310$, $p < .001$). Avoidance coping, on the other hand, was inversely correlated with total adaptation to disability ($r = -.273$, $p < .001$), Containment of Disability Effects ($r = -.239$, $p < .001$), Transformation from Comparative Values to Asset Values ($r = -.167$, $p < .001$), Enlargement of Scope of Values ($r = -.111$, $p = .029$), and Subordination of Physique ($r = -.164$, $p = .001$), suggesting that higher avoidance coping was associated with lower adaptation to disability. The results across the study indicate that higher scores of spiritual intelligence and adaptive coping were associated with lower adaptation to disability.

Strategies, namely positive thinking, are related to better disability adaptation, whereas scores of avoidance coping behaviors are related to poorer adaptation outcomes in people with limb amputation.

4. Discussion

The present study investigated the association of spiritual intelligence, coping with disability, and adaptation to disability in patients with Limb amputation. The results showed that there were significant positive relationships between all three variables. In particular, spiritual intelligence was positively related to both adaptation to disability and coping with disability; coping with disability was also positively related to adaptation to disability. The results underscore the significance of psychological resources in the successful rehabilitation after amputation of a limb. The present study revealed that spiritual intelligence and adaptation to disability have a significant

positive correlation. Consistent with Kanwal,⁽²¹⁾ spiritual intelligence is seen to be important in psychosocial rehabilitation processes, including the ability to make meaning, resilience, and emotional well-being. Likewise, K. Hosravi and Nikmanesh (2014) noted that those who had higher spiritual intelligence had higher psychological resilience and lower psychological stress, and Awan and Sitwat⁽²²⁾ reported a positive relationship between spirituality and psychological well-being. Based on the present findings, it is considered that SIA may help to find meaning out of adversity, have more hope, and be more resilient when facing challenges as a result of an amputation in the limbs. The study also showed that there was a significant positive correlation between spiritual intelligence and coping with disability. The result is consistent with the findings of Sa'adati & Lashani⁽²³⁾, who found that spiritual intelligence had a significant influence on coping strategies. Similarly, Kanwal⁽²¹⁾ pointed out that spiritual intelligence training can help individuals to improve self-awareness and emotional regulation to strengthen adaptive coping, while Khosravi and Nikmanesh⁽¹⁸⁾ demonstrated that spiritual intelligence can help individuals to be resilient during stressful situations. The results suggest that spiritually intelligent people are more likely to engage in positive coping behaviors when going through rehabilitation. Also, the subscale analysis indicated that positive thinking was positively related to adaptation to disability and avoidance coping was negatively related to adaptation to disability, similar to the findings of Dunn⁽²⁴⁾ and Horgan and MacLachlan.⁽⁸⁾ The results obtained for these subscales, however, should be viewed with caution as some of the subscales of the CDDS showed poor internal consistency within the current sample. The α values were .49 for Social Sensitization & Support, .53 for Adaptation, and

.20 for Avoidance. In particular, the very poor internal consistency of the Avoidance subscale could have led to measurement error and thus influenced the size and consistency of the observed correlation with adaptation to disability. Therefore, it is important to note that the correlations at the subscale level (particularly with avoidance coping) should be considered exploratory and that they should be interpreted with caution. Overall, the results indicated that spiritual intelligence and adaptive coping might be psychological resources that are relevant to adaptation after the amputation of the limbs. The present study, however, has a cross-sectional correlational design, and therefore, the results should not be taken as evidence that spiritual intelligence or coping leads to improved adaptation. Future research is warranted to investigate whether enhancing these psychological resources can positively influence adaptation in persons with limb amputation using a long-term and/or intervention study design.

Conclusion

The present study compared the relationship among spiritual intelligence, coping with disability, and adaptation to disability among people with amputated limbs who were seeking treatment at the Artificial Limb Centre, Fauji Foundation Hospital, Rawalpindi. The results showed that there was a positive relationship between spiritual intelligence and coping with and adaptation to disability. In addition, positive coping (positive thinking) was positively correlated with adaptation to disability, and avoidance coping was significantly negatively correlated. The results of this study underline the need to incorporate psychological and spiritual support and resources in the process of successful adaptation following the removal of a limb and the inclusion of psychosocial support services in rehabilitation care.

Limitations

While interpreting the findings of the present study, the following limitations should be kept in mind: This study used a cross-sectional correlational design, and it was difficult to establish a causal relationship between spiritual intelligence, coping with disability, and adaptation to disability. Self-report questionnaires were used to gather data; these can have response and social desirability biases. The findings may not be generalizable to other rehabilitation settings or populations, as purposive sampling was done from one rehabilitation center (Artificial Limb Centre, Fauji Foundation Hospital, and Rawalpindi). The participants were from various parts of Pakistan, but only those who were getting rehabilitation services at one rehabilitation institution were included.

Future Recommendations

Future research should use a longitudinal or prospective design to gain a deeper understanding of the developmental process of spiritual intelligence, coping, and adaptation to disability during rehabilitation. Experimental or intervention research can be undertaken to assess the efficacy of the spiritual intelligence enhancement program and adaptive coping skills training for enhancing adaptation among people with limb amputation. Future research should sample from more than one rehabilitation centre throughout Pakistan to generalize the findings, using probability sampling methods.

To gain a deeper understanding of adaptation to disability, other psychosocial factors should also be explored, such as the individual's resilience, perceived social support, quality of life, depression, anxiety, post-traumatic growth, and psychological well-being.

5. Multidisciplinary rehabilitation programs should include psychological counselling, coping skill training, and spiritually sensitive interventions to help with rehabilitation after a limb amputation.

Authors declare no conflict of interest.

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Disclosure /Conflict of interest:

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