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Role of Physiotherapy in Improving Physical and Psychological Dimensions of Sexual Health in Post-Stroke Survivors- A Randomized Control Trail

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Abstract

Background & purpose: Sexual dysfunction being an important disability of stroke, which is often least addressed by the patient as well as health care workers and can influence the quality of living among the stroke survivors as well as their partners in a negative way. The present study was conducted with an aim to examine the effect of sexual rehabilitation in the form of structured Physiotherapy and counseling on physical and psychological dimensions of sexual health in post-stroke patients.

Materials and Methods: The two groups of the study were Group A (Control group) who were given routine Physiotherapy with no emphasis of sexual health, Group B (Experimental Group) who were given routine Physiotherapy and Sexual rehabilitation by Structured Physiotherapy and Counseling.

The physical and psychological dimensions of sexual health were assessed by CSFQ-14 male and female, DASS-21 for Depression, anxiety and stress levels pre-test and after six months follow up.

Results: The analyses of CSFQ-14 and Depression, Anxiety, Stress Sub scores of DASS-21 from baseline to 6 months in Group A and Group B are found to be significant. There was significant improvement in physical and psychological dimensions of sexual health in experimental group i.e Group B.

Conclusion: From this study it is concluded that Physiotherapy in the form of a structured rehabilitation program and verbal communication improves the Physical and Psychological dimensions of sexual health in Post- stroke patients.

Keywords

Sexual health; Stroke; Sexual dysfunction; Physiotherapy; Counseling; CSFQ-14; DASS-21

Introduction

Stroke is one of the major causes of disability and premature death in developing countries such as India. According to the Global Burden of Diseases (GBD) study in 1990, stroke was the second leading cause of death worldwide [1]. There is twenty six percent increase in global stroke deaths during the past two decades [2]. It is observed in many studies that individuals at a young age account for 5-10% of the entire stroke cases worldwide which has a debilitating effect on the family and society [3]. An important disability of stroke is the loss of or challenges with the sexual function which is not often addressed and can influence the quality of living among the stroke survivors as well as their partners in a negative way [4].

The common sexual dysfunction amongst stroke survivors are decreased libido, impaired erectile and ejaculatory functions, decreased vaginal lubrications, impaired ego, self-esteem, and depression [5,6]. Though Sexual dysfunction can lead to secondary complications like Depression and suicide tendencies, due to various barriers, it is less frequently addressed both by patients and health care providers [7]. There is a need to address sexual health issues caused by stroke to completely rehabilitate the patient and bring him back to normal life [8].

The present study was conducted with an aim to examine the effect of sexual rehabilitation in the form of structured Physiotherapy and counseling on physical and psychological dimensions of sexual health in post-stroke patients.

Materials and Methods

The study was conducted at Lalitha Super specialty Hospital, Guntur, Andhra Pradesh, India. The study has ethical approval from the Institutional Ethical committee. Reg.No ECR/ 439/Inst/AP/2013/RR-16.

Patients

A total of 486 subjects after confirmed diagnosis of Stroke admitted into the Inpatient department of the hospital from May 2017 to August 2019 were screened for the study. The patients were explained about the study and took consent in written form before incorporating into the study. The consent form was printed bilingually i.e. English and Telugu. Two hundred and eighteen stroke subjects were recruited for the study after satisfying the inclusion criteria (Figure 1).

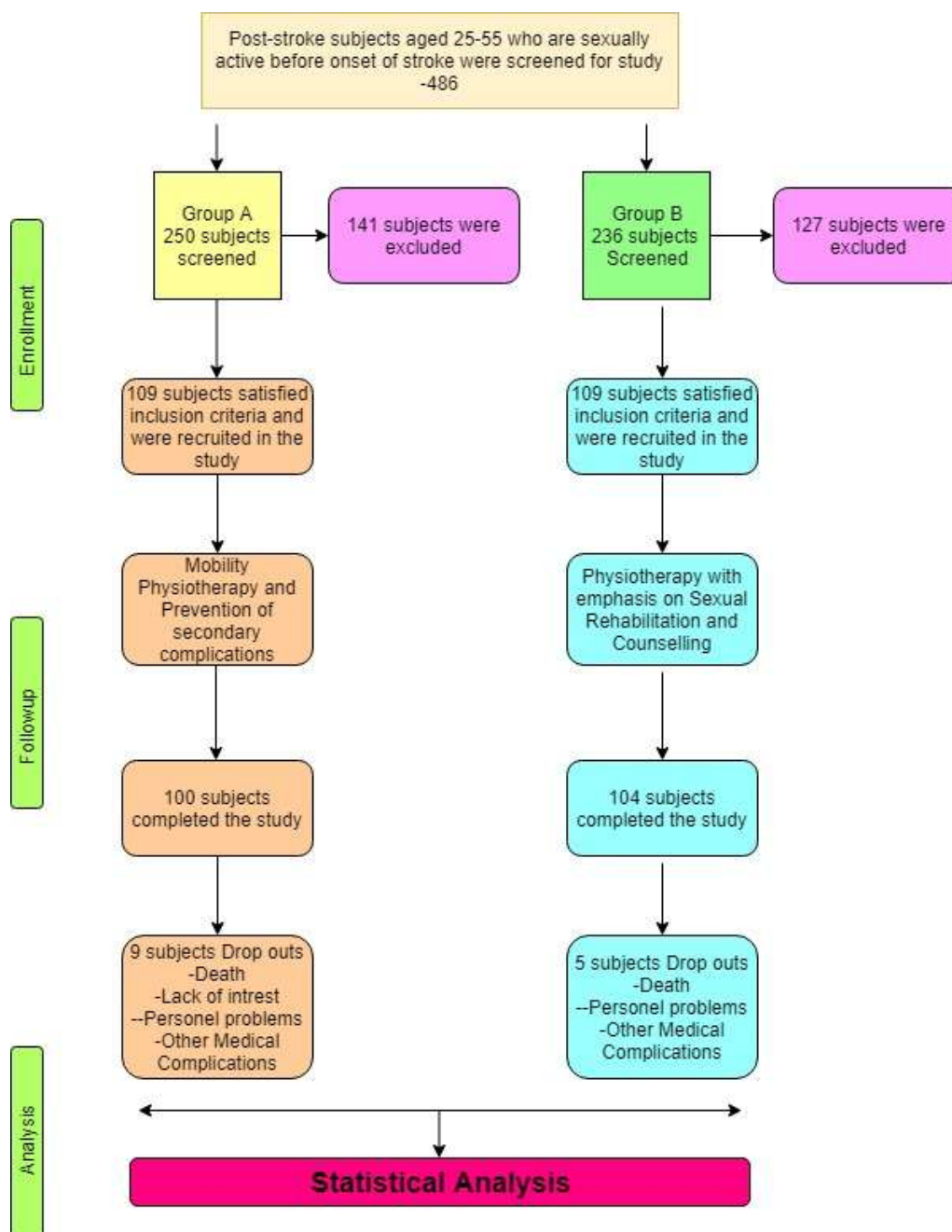


Figure 1: Consort Flow chart.

Inclusion criteria

1. A Confirmed diagnosis of stroke.
2. Age 20 - 55 years
3. Mentally cognitive
4. Ability to communicate
5. Cognitive and cooperative
6. Both males and females
7. Sexually active before onset of stroke.

Exclusion criteria

1. Severe cognitive issues
2. Dementia
3. Global aphasia
4. Wernicke's aphasia
5. Sexually inactive before the onset of stroke

Study design

The study was a single blinded (Subject blinded) randomized clinical controlled trial. The patients were assigned into Group A (Control Group, n=109) and Group B (Experimental Group, n=109) by computerized randomization. At the time of enrollment in the study, the physiotherapist gave the information orally about the study and confirmed with them about participation.

Intervention

Both groups were given physiotherapy as per their scheduled protocols by the trained physiotherapist assigned along with standard medical and nursing care. The patients were intervened from the first day of recruitment. The physiotherapy was given once a day, on all days for a period of two weeks.

Control group (Group A)

Routine physiotherapy was given which included Functional reeducation exercises, Balance training, Coordination exercises, Gait training, Strengthening, respiratory exercises for 2 hours per day on all days for a period of two weeks.

Experimental group (Group B):

The Experimental (Group B) patients were given sexual rehabilitation in the form of structured Physiotherapy and counseling along with routine Physiotherapy same as Control (Group A) The structured physiotherapy includes Pelvic floor training, Kegel exercises, Pilates, Functional electrical stimulation, Kinesiotherapy for 2 hours per day on all days for a period of two weeks. The counseling was given using PLISSIT model (Permission, Limited Information, Specific Suggestions, and Intensive therapy).

At the time of discharge both groups were given printed literature about the exercises to be carried out at home. The patients were called back for follow up after 6 months. The experimental group was given

counseling 2 times a week by PLISSIT model during the period of stay in the hospital and later once in a month telephonically.

Outcome Measures

The Sexual functioning of the patients was assessed pre-test and post-test by CSFQ-M and CSFQ-F for males and females respectively. The Psychological dimensions like depression levels, anxiety levels, stress levels due to sexual dysfunction was assessed pre-test and post-test by DASS-21. The CSFQ-14 has strong construct validity and internal reliability.

The DASS-21 is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. DASS-21 is reliable and suitable to assess depression, stress and anxiety with good validity and reliability. The measurements are taken before intervention and at 6 months follow up.

Statistical Analysis

In this study to analyze the effect of Physiotherapy on Physical and Psychological dimensions of sexual health in stroke patients, demographic data such as age, intervention time since onset of stroke, gender, type of stroke, side of hemiplegia and functional independence measures were compared using Mann Whitney u Test.

The CSFQ-14 scores of pre-test and post- test were expressed in Mean and Standard deviation. The Pre-test and Post-test scores were analyzed for statistical difference within the group was calculated by Paired 't' test. The statistical significance between the groups was calculated by unpaired' test at 5 % level of significance.

The DASS-21 scores of pre-test and post- test were expressed in Mean and Standard deviation. The Pre-test and Post-test scores were analyzed for statistical difference within the group was calculated by Paired't' test. The statistical significance between the groups was calculated by unpaired 't' test at 5 % level of significance.

We used one way-Anova and Tukey significant difference test for Post-hoc comparisons. To explore the practical significance of group differences, effect size was calculated by Cohen's d, which reflects the effect of treatment within a population of interest

Results

At the end of study 9 subjects dropped out from Group A and 5 subjects dropped from Group B due to various reasons (Figure 1). A total of 100 subjects in group A and 104 subjects completed the study and were analyzed for statistical significance. The baseline demographic features showed no significant difference between the groups except that Group A had more male subjects (Table 1). All the subjects were heterosexuals. The CSFQ-14 scores in both groups have shown improvement and are statistically significant at $p < 0.05$ (Table 2) The experimental group (Group B) (46%) has shown more significant improvement in CSFQ-14 scores than control group (Group A) (25.5%) (Table 3). The analyses of

Depression Sub scores of DASS-21 from baseline to 6 months in Group A and Group B are found to be significant. There was improvement in the scores of Depression, Anxiety and Stress sub scores of DASS-21 in both Experimental Group (Group B) and Control group (Group A) which are statistically significant at $p < 0.05$ (Table 4). In the analyses of difference in the scores of pre-test and post-test values of Depression, Anxiety and Stress sub scores of DASS-21 sub score of DASS-21, Group B showed more improvement than Group A (Table 5). The analyses of Post hoc comparison between group A and Group B for CSFQ-14 scores & DASS-21 scores by one way ANOVA and Tukey HSD test shown that the scores among Group A and Group B are statistically significant (Table 6). The analyses of effect size significance between Group A and Group B for CSFQ-14 scores & DASS-21 scores, the effect size is Large (Table 7).

S.no	Characteristic	Group A		Group B		p-value
		Males	Females	Males	Females	
1	Age (years)*	41.23	40.22	41.89	42.12	$p < 0.05$
2	Gender	60	49	55	54	$p < 0.05$
3	Etiology (ischemic/hemorrhagic)	43/17	31/18	43/12	37/17	$p < 0.05$
4	Side of hemiplegia (right/left)	18/42	18/31	20/35	21/33	$p < 0.05$
5	Time post stroke before recruitment* (in days)	3.13	2.89	3.01	2.96	$p < 0.05$
Type of Sexuality	Group A		Group B		Total	
	Males	Females	Males	Females		
Heterosexuals	60	49	55	54	218	
Homosexuals	0	0	0	0	0	
Bisexuals	0	0	0	0	0	
Total	60	49	55	54	218	
*Mean						

Table 1: Summary of Baseline Demographic Characteristics of Group A and Group B.

Groups	Group A	Group B
Pre-test Mean	33.97	33.06
Pre –test SD (+/-)	5.06	5.09
Post –test mean	37.03	58.1
Post-test SD(+/-)	6.19	7.79
T value	7.3	27.60
Level of significance	$p < 0.05$	$p < 0.05$

(p value)		
% of change	8.02 %	76.4%

Table 2: Pre-test –Posttest Values of CSFQ-14 from baseline to 6 months follow up by Paired ‘t’ test.

CSFQ-14	Mean of Differences between Pre-test and Post-test Scores	S.D +/- of Differences between pre-test and Post test scores	T value	Level of significance (p value)
Group A	3.06	4.18	21.72	P<0.05
Group B	25.07	9.26		

Table 3: Pre-test and post-test Comparison of differences between Baseline to 6 months follow up of CSFQ-14 scores in Group A and Group B by unpaired ‘t’ test.

Depression Scores	Group A	Group B
Pre-test Mean	18.53	15.04
Pre –test SD (+/-)	8.89	7.19
Post –test mean	16.76	10.27
Post-test SD(+/-)	7.08	5.19
T value	8.95	10.32
Level of significance (p value)	p<0.05	p<0.05
% of change	25.5%	46.4%

Anxiety Scores		
Pre-test Mean	20.83	19.37
Pre –test SD (+/-)	9.84	9.74
Post –test mean	16.25	9.27
Post-test SD(+/-)	6.80	4.06
T value	3.90	9.62
Level of significance (p value)	p<0.05	p<0.05
% of change	28.18%	108%
Stress Scores		
Pre-test Mean	24.10	22.59
Pre –test SD (+/-)	7.12	8.67
Post –test mean	22.48	10.87
Post-test SD(+/-)	5.74	7.44
T value	7.50	10.31
Level of significance (p value)	p<0.05	p<0.05
% of change	7.2%	107%

Table 4 : Pre-test and post-test values of Depression, Anxiety & Stress Sub scores of DASS-21 from Baseline to 6 months follow up by paired t test.

Group	Mean of Differences between Pre-test and Post-test Scores	S.D +/- of Differences between pre-test and Post test scores	T value	Level of significance (p value)
Depression Sub Scores of DASS-21				
Group A	1.77	2.2	6.03	P<0.05
Group B	4.77	4.65		
Anxiety Sub Scores of DASS-21				
Group A	4.35	6.85	5.75	P<0.05
Group B	10.10	7.45		
Stress Sub Scores of DASS-21				
Group A	1.62	2.20	12.40	P<0.05
Group B	11.72	8.01		

Table 5: Comparison of differences between Baseline to 6 months follow up Depression, Anxiety & Stress Sub scores of DASS-21 in Group A and Group B by unpaired 't' test.

Variable	F statistic	P value	Tukey HSD Q statistic	THSD P value	Significance
CSFQ-14	472.13	1.1102e-16	30.72	0.001	p<0.01
Depression Sub Scores of DASS-21	33.155	3.1119e-08	8.14	0.001	p<0.01
Anxiety Sub Scores of DASS-21	36.38	7.5594e-09	8.53	0.001	p<0.01
Stress Sub Scores of DASS-21	153.89	1.1102e-16	17.54	0.001	p<0.01

Table 6: Post hoc Comparison between Group A and Group B for CSFQ-14 & DASS-21 scores by one- way ANOVA and Tukey HSD test.

Variable	Effect Size Cohen's d
CSFQ-14	3.06
Depression Sub scores of DASS-21	0.8
Anxiety Sub scores of DASS-21	0.8

Table 7: Effect size significance between Group A and Group B for CSFQ-14 scores, DASS-21 Subscores.

Discussion

In this study to evaluate the role of physiotherapy on physical and psychological dimensions of sexual health for post-stroke survivors, the results show that when physiotherapy given along with counseling, the sexual health and participation of post stroke survivors improved.

Sexual activity is an integral part of life and is important to address sexual problems after stroke [9]. Stroke being the leading cause of death and disability may lead to decline in sexual desire/interest and coital frequency for both sexes. Sexuality is a broad concept and is less discussed among the patients and health care workers in India [10]. Sex is an important component of life and has an effect on overall health of the patient with stroke. Sexual decline is the most common but least addressed effects of stroke [11]. It is assumed that on an average the stroke survivors are 15 years younger in developing countries when compared to developed countries [12]. It is observed that in India, the sexually active phase is below the age of 50 years for both males and females with 0% reporting no sexual activity [13]. The analysis of age in our study suggest that the mean age of male participants is 41.54 and female participants is 41.22 suggesting the acute need of sexual rehabilitation.

The sexual satisfaction and participation interest is different among homosexuals and heterosexuals [14]. In our study, none of the subjects declared as homosexuals. The Homosexuals and Bisexuals usually doesn't come out of closet and expose themselves about their sexual preference in front of the Doctors and health care professionals due to higher rates of discriminations from doctors and health care professionals [15]. Even though some researches show that Homosexuals have risk of developing Stroke in developed countries like USA, there was no or limited research on Incidence of Stroke among the Homosexuals and Bisexuals in India. Hence our study couldn't assess the effectiveness of sexual rehabilitation based on sexual preference.

Many studies have shown that adequate sexual expression is an essential part of many human relationships and may enhance quality of life and provide a sense of physical, psychological and social well-being [16]. Sexual dysfunction is very common in post stroke patients. It is mainly due to disturbed autonomic network structures and pathways that contribute to erection and physical impairment leading to motor weakness, spasticity and physical handicaps of sexual activity [17,18]. The Experimental group Subjects (group B) who were given routine physiotherapy along with physiotherapy on special emphasis on Sexual rehabilitation and counseling on sexual function, showed marked increase in sexual

functioning with CSFQ -14 scores above the cut off points. They showed improvement in sexual desire and frequency, sexual interest, sexual pleasure, arousal and excitement, orgasm and completion.

Physiotherapy in the sexual rehabilitation includes, training for the Pelvic floor muscles, Pilates exercises, bed-mobility exercises, endurance exercises, Functional electrical stimulation of Bulbocavernosus muscle. Functional electrical stimulation stimulates the muscles and nerves effectively. When electrical impulses are given to the Bulbocavernosus muscle, there will be high regenerative capacity of smooth muscle cells. The electrical stimulation stimulates the nerve pulses to which the muscle cells of the cavernous body react and increases their responsiveness and reaction speed, thus facilitating the erection [19]. In a study by Lousia Ng et al., concluded that a 30 minute individual sexual rehabilitation program is effective in addressing sexual dysfunction in stroke patients [20].

The pelvic floor muscles play an important in sustaining blood flow to the penis to maintain erections [21,22]. These muscles keep a constant pressure on penile veins during sexual activity and prevent blood from leaving the area making the erection sustained and possible [23]. Kegel exercises for women to improve strength of pelvic floor muscles help in improving the sexual function in women. The kegel exercises helps to relax vaginal muscles which makes the vagina to be more open, thus reducing the pain during the sexual intercourse, as pain is complained by many post-stroke women and have stopped participating in the sexual activity with fear of pain [24,25]. They also increase blood circulation to vagina and pelvic floor muscles in Women and increase vaginal lubrication aids in pain free and more comfortable sexual intercourse during penetration [26,27].

Many patients often require counseling on sexual health after stroke. It is evident that they have many fears and anxiety about sexual functioning post-stroke. Sexual health counseling by PLISSIT model of sex therapy has shown tremendous improvement in sexual health in patients with sexual dysfunction of various causes including stroke [28]. It is an acronym for permission, limited information, specific suggestions and intensive therapy [28]. In a study by Song H et.al, effects of sexual rehabilitation intervention program on stroke patients and their spouses, they found the evidence of usefulness of sexual education, counselling, rehabilitation on the sexual health of post-stroke patients [29]. Our previous study, A Pilot Study of Randomized Clinical Controlled Trail on Role of Physiotherapy on Physical and Psychological Dimensions of Sexual Health in Post Stroke Patients also gave beneficial results in sexual health in post stroke patients, based on which the current study is carried out [30].

To the best of our comprehension no other study was done earlier to find the effectiveness of Physiotherapy on Physical and Psychological dimensions of sexual health in post-stroke survivors. Hence this makes it a unique study where both physical and psychological sexual health issues in post –stroke patients were addressed and gained positive outcomes.

Conclusion

The results of this study suggested that, the stroke subjects who received sexual rehabilitation program along with counseling and routine physiotherapy has a greater improvement in sexual health, improvement of coping depression, anxiety, stress and gaining overall functional independency

compared to the group received routine physiotherapy alone. Sexual rehabilitation protocols must be incorporated in the Multidisciplinary approaches dealing stroke patients and the Health care professionals must be encouraged to discuss and counsel their patients regarding sexual health in post-stroke survivors.

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