Comparison of Physical Disability in Mild, Moderate and Severe Stroke Survivors

Mandeep Kang and Navkaran S. Shergill

Abstract

Aim: The present study compares the physical disability in mild, moderate and severe stroke survivors. **Material and Method:** A random sample of 70 stroke patients (both males, females and rural, urban) were chosen for the study. The sample chosen was assessed for physical disability with regard to the gender and geographical area. The physical status of stroke survivors was assessed using the following tools: Barthel Index, Structured questionnaire and Disability assessment schedule (WHO).The mean scores of patients in mild group, moderate group and severe group were calculated. Median, Standard error and Standard deviation were calculated, and t-test was used to find out intergroup differences. **Results:** The results of this study depicted a significant difference in mild and severe group of stroke survivors in terms of physical disability**.** It is found that males and females of mild group observed significant differences with males and females of severe group in terms of disability**.** Urban and rural patients in mild group observed significant difference, when compared to urban and rural in severe group. The findings of the study suggest that males and females of mild group vary significantly from males and females in severe group in terms of physical disability. The total group presents a significant difference, on comparing mild and severe (t=3.102, df=48, p<0.01) in terms of disability. The comparison of mild-moderate and moderate-severe stroke survivors depicted variations in males, females, rural and urban patients but no significant differences in total groups. **Conclusion:** The conclusions drawn from the study predict that post-stroke physical disability in mild and severe group of patients vary significantly in terms of physical disability. The total group, males, females, rural and urban patients in mild group depicted remarkable differences with the females, males, urban and rural patients in severe group of stroke survivors and vice-versa. Physical status in females was poorer than males belonging to the same group. Similarly, physical disability was more pronounced in rural stroke patients compared to urban patients.

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Introduction

A stroke occurs when the blood supply to part of your brain is interrupted or reduced, preventing brain tissue from getting oxygen and nutrients. Brain cells begin to die in minutes. Stroke is now the third (fifth in 1990) largest cause of disability-adjusted life years in the developed

world. Around half of those who do survive stroke are permanently disabled. The cumulative incidence of stroke ranged from 105 to 152/100,000 persons per year, and the crude prevalence of stroke ranged from 44.29 to 559/100,000 persons in different parts of the country during the past decade (Suresh et al., 2016). Stroke incidence is especially increasing in India, and it has nearly doubled since 2010 (Das et al., 2012).There are a wide range of post-stroke problems, including movement, function, mobility and balance (David et al., 2014). The changes in physical status results in physical disabilities i.e., impairment in performing functional abilities, muscle weakness, deformities and dependency. The physical disabilities present as a sequelae of paralysis and musculoskeletal deformities. This further leads to dependency and impairment in performing functional activities. The improvement or recovery is more pronounced among patients with less severe stroke than those who are more severe (Manuel and Mercedes 2020). Thus, there is a wide variation in the physical disability and its recovery in stroke survivors depending upon the level of severity i.e., mild, moderate and severe. The mild patients depict improvement in physical disability and dependency compared to moderate and severe. More severe stroke, previous history of stroke and stroke recurrence are found to be significant risk factors for long-term disability. Socio-demographic factors i.e., rural, urban and male, female are negatively associated with functional outcome (Yang Yang et al, 2016). The characteristics and the physical disability in post- stroke patients differ between rural and urban areas, which could be used to design specific preventative measures. The present study is designed to compare the physical disability in mild, moderate and severe stroke survivors. It also focuses on the influence of gender (male, female) and geographical area (rural, urban) on the physical status of stroke survivors. The rural population of stroke patients, being unaware of super-specialized doctors, is not able to receive proper medical treatment. The rural population is more inclined towards other traditional methods of treatment based on cultural, religious and mythological sentiments. This reduces the chances of recovery and makes them more dependent and disabled. (Paramdeep Kaur et al, 2017). Women show higher chances of disability and dependency after stroke (Rodica et al., 2009). Post-stroke women are more disabled as compared to men due to their weak emotional stability and psychological status (Sue-Min et al., 2005).

Materials and Method

A random sample of 70 post-stroke patients (both males, females and rural, urban) were chosen for the study. The scales were administered to the stroke patients of both rural and urban areas of Amritsar district. The sample chosen was assessed for physical disability with the help of valid and reliable tools.

The physical disability of stroke survivors was assessed using the following tools: Barthel Index, Structured questionnaire and Disability assessment schedule (WHO). The total scores of Barthel index, WHO Disability assessment schedule and structured questionnaire are summed up to determine physical or functional disability. On the basis of the total scores, patients are categorized into 3 categories: mild, moderate and severe. Patients with scores falling between 0 and 76 are categorized into severe category, scores ranging 77 to 154 in moderate category and patients with scores between 155 and 232 are categorized in mild category. The mild group consists of 32 patients, moderate group includes 22 patients and severe group includes 16 patients. The mean scores of patients in mild group and severe group are calculated. S.D. and S.E. are calculated, and t-test is used to find out intergroup differences.

Results

Table 1. Comparison of the Mild and Severe Stroke Patients in terms of Disability

Sr. No.	Mild group	N	Mean	S.D.	Severe group	N	Mean	S.D.	S.E.	t-value of significance	Df
1	Male	18	194	1.53	Female	09	38	0.56	1.41	2.460*	df=25,p<0.05, t>1.708
2	Female	14	190	0.62	Male	07	44	0.61	1.27	2.073*	df=19,p<0.05, t>1.729
3	Male	18	194	0.71	Male	07	44	1.49	1.33	3.086**	df=23,p<0.01, t>2.500
4	Female	14	190	0.57	Female	09	38	0.66	1.60	2.183*	df=21,p<0.05, t>1.721
5	Rural	17	188	0.69	Urban	09	45	0.82	1.54	2.345*	df=24,p<0.05, t>1.711
6	Rural	17	188	1.49	Rural	07	37	0.80	1.90	3.086**	df=22,p<0.01, t>2.508
7	Urban	15	195	0.69	Rural	07	37	0.73	2.10	1.912*	df=20,p<0.05,t>1.725
8	Urban	15	195	0.76	Urban	09	45	0.69	2.31	2.986**	df=22,p<0.01,t>2.508
9	Total gp	32	191.75	1.52	Total gp	16	41	1.70	1.29	3.102**	df=46,p<0.01,t>2.410

stands for significance at 0.05 level of confidence
stands for significance at 0.01 level of confidence

Table 1 shows the comparison of mild and severe groups of stroke survivors in terms of disability. On comparing the mild and severe groups, a significant difference is reported in males, females and females, males (t=2.460, t=2.073, df=25, df=19, p<0.05, respectively) .The females and males in mild group observe a significant difference compared to females and males in severe group (t=2.183, t=3.086, df=21, df=23, p<0.05, p<0.01, respectively). The results shows that rural patients in mild group when compared to urban in severe group (t=2.345, df=24, p<0.05) and urban patients in mild group compared to rural in severe group (t=1.912, df=20, p<0.05) observe a significant difference. The urban patients in mild and severe group (t=2.986, df=22, p<0.01) and rural patients in mild and severe group (t=3.086, df=22, p<0.01) represent a significant difference. A significant difference is observed in total group, when comparing mild and severe group (t=3.102, df=46, p<0.01).

Table 2. Comparison of Mild and Moderate Stroke Patients in terms of Disability

Sr. No.	Mild group	N	Mean	S. D.	Moderate group	N	Mean	S. D.	S.E.	t-value of significance	Df
1	Male	18	194	1.53	Female	10	112	0.36	1.34	2.136*	df=26,p<0.05,t>1.706
2	Female	14	190	0.62	Male	12	120	0.67	1.20	1.052	df=24
3	Male	18	194	0.71	Male	12	120	1.47	1.13	2.860**	df=28,p<0.01,t>2.467
4	Female	14	190	0.57	Female	10	112	0.66	1.70	1.805*	df=22,p<0.05,t>1.717
5	Rural	17	188	0.69	Urban	14	123	0.52	1.64	1.098	df=29
6	Rural	17	188	1.49	Rural	08	108	0.86	1.96	1.526	df=23
7	Urban	15	195	0.69	Rural	08	108	0.73	2.07	0.869	df=21
8	Urban	15	195	0.76	Urban	14	123	0.69	2.15	2.051*	df=27,p<0.05,t>1.703
9	Total gp	32	191.75	1.52	Total gp	22	115.75	0.96	1.32	1.145*	df=52

stands for significance at 0.05 level of confidence
**stands for significance at 0.01 level of confidence

Table 2 shows a comparison of mild and moderate stroke patients in terms of disability. The males of mild group and females of moderate group demonstrate statistically significant difference ($t=2.136$, $df=26$, $p<0.05$). On the other hand, males of two groups ($t=2.860$, $df=28$, $p<0.01$) and females of both groups ($t=1.805$, $df=22$, $p<0.05$) show a significant difference. The urban patients of both the groups depict a statistical significant difference ($t=2.051$, $df=27$, $p<0.05$). However, the comparison of means of the various groups observed a wide variation.

Table 3 shows the comparison of moderate and severe stroke survivors in terms of disability. The males of moderate group and females of severe group demonstrate statistically significant difference ($t=2.080$, $df=19$, $p<0.05$). On the other hand, males of two groups ($t=3.013$, $df=17$, $p<0.01$) and females of both groups ($t=2.979$, $df=17$, $p<0.01$) show a significant difference. The urban and rural patients of both the groups depict a statistical significant difference ($t=1.859$, $df=21$, $p<0.05$ and $t=3.245$, $df=13$, $p<0.01$ respectively).A significant difference is observed between urban patients of moderate category and rural of severe ($t=2.967$, $df=19$, $p<0.01$).

Table 3. Comparison of the Moderate and Severe Stroke Patients in terms of Disability

Sr. No.	Moderate group	N	Mean	S.D	Severe group	N	Mean	S.D	S.E.	t-value of significance	Df
1	Male	12	120	1.53	Female	09	38	0.57	1.34	2.080*	df=19,p<0.05,t>1.729
2	Female	10	112	0.62	Male	07	44	0.60	1.20	1.086	df=15
3	Male	12	120	0.71	Male	07	44	1.45	1.13	3.013**	df=17,p<0.01,t>2.567
4	Female	10	112	0.57	Female	09	38	0.66	1.70	2.979**	df=17,p<0.01,t>2.567
5	Rural	08	108	0.69	Urban	09	45	0.53	1.64	0.876	df=15
6	Rural	08	108	1.49	Rural	07	37	0.81	1.96	3.245**	df=13,p<0.01,t>2.650
7	Urban	14	123	0.69	Rural	07	37	0.95	2.07	2.967**	df=19,p<0.01, t>2.539
8	Urban	14	123	0.76	Urban	09	45	0.83	2.15	1.859*	df=21,p<0.05,t>1.721
9	Total gp	22	115.75	1.52	Total gp	16	41	1.70	1.32	1.463	df=36

stands for significance at 0.05 level of confidence
**stands for significance at 0.01 level of confidence

Discussion

The present study was aimed to study the impact of stroke on the physical conditions of the patients in the district of Amritsar. The stroke patients in this study were divided into 3 categories (mild, moderate and severe) on the basis of severity. Moreover, the clinical spectrum of stroke patients varied with gender and demographic status (i.e., rural, urban).The present study was focused to find out the differences among mild, moderate and severe (post-stroke stages) stroke survivors' in terms of physical disabilities. The results of the study suggest that physical disabilities in mild and severe category of stroke patients differ significantly among male-female and rural-urban and total group of patients. These results fall in line with the results of a study performed by Manuel and Mercedes (2020). The males of mild group and females of moderate group, males of two groups and females of both groups show a significant difference among each other. This variation was also seen in patients belonging to different demographic strata. The urban patients of both the mild and moderate groups and the total groups of both categories depict a significant difference among each other. On comparison of moderate and severe groups, the results illustrate that the males of moderate group and females of severe group, males of two groups and females of both groups show a significant difference. A significant difference is also observed between the urban and rural patients of both the moderate and severe groups and among the urban patients of moderate category and rural of severe group. Furthermore, it is seen that females were more affected with physical disability compared to males. The results of the present study are in agreement with the reports by Roquer et al., (2003). Severe strokes are associated with higher rates of physical disability (Robert Teasell et al, 2018). Severe stroke, previous history of stroke and stroke recurrence are found to be significant risk factors for long-term disability. It was observed that women are at a higher risk of

developing cardiovascular diseases, such as stroke, owing to a deficiency of estrogen and alterations in lipid metabolism (Magalhães 2001). The physical disability was more pronounced in rural population compared to urban stroke survivors due to the lack of medical facilities and super-specialists in rural areas. Also, the lack of awareness, education and dependency on traditional and mythological methods of treatment attributes to the poor physical status in rural stroke patients. These results fall in line with the results of a study conducted by Jeyaraj and Paulin (2013).

Conclusion

The conclusions drawn from the study predict that post-stroke physical disability in mild and severe group of patients vary significantly in terms of physical disability. The total group, males, females, rural and urban patients in mild group depicted remarkable differences with the females, males, urban and rural patients in severe group of stroke survivors and vice-versa. Physical status in females was poorer than males belonging to the same group. Similarly, physical disability was more pronounced in rural stroke patients compared to urban patients.

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Conflict of Interest: None declared