Habitual Physical Activity (HPA) and its Relation with Cerebrovascular Accident (CVA)

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Abstract

Background: Stroke is the third leading cause of death in Bangladesh. The World Health Organization ranks Bangladesh's mortality rate due to stroke as number 84 in the world. Study suggested that a lot of factors are involved in the cerebrovascular accident (CVA) and Habitual Physical Activity plays an important role in prevention of stroke. Surgeon General's report indeed shows that physical activity is associated with lower stroke risk and subsequent stroke death.

Methodology: Purpose of the present cross sectional study is to understand the level of habitual physical activities of patient's with CVA before stroke. The study conducted in the Stroke Rehab Unit of Centre for the Rehabilitation of the Paralysed (CRP). Sample was chosen according to the non probability "purposive" sampling method. Data was analyzed with the software named Statistical Package for Social Sciences (SPSS) version 16.0.

Results: Purposively selected 135 patients were included in the study. Mean± SD of age was 53.1 ± 12.7 years. Among them 76.3% were male and 23.7% were female. Highest numbers of participants were in the age group of more than 58 years (34.8%). More than half (52.6%) of the participants were from upper lower class according to Kuppuswamy's SES Classification. Study also found that 37.8% participants had heavier workload compare with others. Alongside, during leisure 41.5% were sometimes watching TV and 54.8% were seldom walking during leisure whereas 20% used to sometimes walking during leisure. Nevertheless, it was found that among the participants 48.1% were never play sports during leisure. Only 5.9% (n=8) were always playing sports during leisure. The study showed no significant relation between workload and CVA $\left(x^2 = 8.796 > P = 0.05 \right)$ and relationship between social status and CVA which also insignificant $\left(x^2 = 1.936 \right.$ > P= 0.05) but significant in the workload relation $\left(x^2 = 2.965 > P = 0.05 \right)$.

Conclusion: It is established by the researcher and scientist that habitual physical activity or active life style reduces the risk of CVA. In contrast, sedentary life style or less physical activity impact on individual's health. Participants were less in percentage affected by CVA who involved in physical activity either in the job or in the leisure activities.

Key Words: CVA; Habitual physical activity; Kuppuswamy's SES classification

Introduction

Cerebrovascular Accident (CVA) or Stroke is a major public health problem both for developed and developing nation globally. Results of stroke a lot of people suffered disabilities, traditionally; epidemiological stroke studies have focused on mortality and recurrence and not on the long-term morbidity. Based on an assessment available figure and estimate by World health Organization (WHO) and World Bank for developing countries overall disabilities present of about 10% of population, the prevalence of disabilities among the adult above the age of 18 years population is about to 14% approximately 10.2 million adult

people suffering disabilities. Stroke is a major cause of disability in adults, resulting in much morbidity and mortality in the western world. Murray & Lopez argued that stroke is the second cause of death and leading cause of disability in Europe [1]. Gunarathne A, et al. [2] explained in his study that stroke is synonymous with Cerebrovascular accident (CVA). WHO defines, Disability involves dysfunctioning at one or more level of physical dysfunctioning (Impaired), individual activity or social participation. It has shown that after attack by stroke the individual facing difficulties in their daily living from personal hygiene to social participation, affecting job and employment to socioeconomic status. Alex M, et al. [3] found in his study that progressive decrease in stroke mortality observed in the last few decades, whereas subsequent increase of stroke survivors with residual impairments and disabilities, have been accompanied by a growing interest in the factors that could interfere with functional outcome and quality of life. However, a retrospective study shows that in Bangladesh, stroke is the commonest type of neurological disorder and is considered as a major health Problem. Liang W, et al. [4] developed a perspective which identify that every year, 150 000 persons die from stroke, while many more are become disabled. There are limited evidences are available to disclose the percentage of population are being engaged doing physical activity in their daily life. So, study needed to present some date and finding the relation with Habitual Physical Activity (HPA) as people are performing in their daily life either in the job or leisure time throughout life before attack by CVA. Siscovick DS, et al. [5] stated that physical inactivity has been related to the occurrence of coronary heart disease, hypertension, diabetes mellitus, and osteoporosis.

As described by Lu S, et al. [6], preventable lifestyle diseases continue to be major contributors to the burden of disease internationally, and physical inactivity is among the top five risk factors contributing to global mortality. Intervention during the earliest developmental years might be required to ensure health promoting behaviors, such as physical activity, are established. It is described by Nelson ME, et al. [7] that regular physical activity, including aerobic activity and muscle-strengthening activity, is essential for healthy aging and reduce chronic diseases like CVA. This preventive recommendation specifies how older adults, by engaging in each recommended type of physical activity, can reduce the risk of chronic disease, premature mortality, functional limitations, and disability.

However, within the public health professions, the professionals are working to develop a comprehensive health program by taking the strategies for health prevention, promotion, rehabilitation and reintegration of an individual. Public health concern in Bangladesh are also increasing day by day, nowadays, health awareness and health conscious are increasing among the population both in urban and rural area especially for the non communicable disease for instance stroke or CVA. But, due to lack of study and resources in our country causes professionals and general population are not aware about the impact of stroke and the importance of taking preventative strategies in the health policy. As evidences said community awareness reduces of risk factors for stroke about to 20–40%. Therefore, it is believe after doing this study researcher would be able to unveil some facts and findings about stroke and significance of becoming active or participate in the physical activity in the daily life style. Besides, general people would be able to understand about consequences effect of becoming habitual to sedentary life style. So current study would look for what are the levels of relationship of habitual physical activities (HPA) with Hemiplegic patients?

Main objective was to understand the level of habitual physical activities of patient's with hemiplegic before attack by CVA. Furthermore, this study would search to find some other specific area includes exploring the socio demographic characteristics of patients with hemiplegia or CVA (Kuppuswamy classification). This study will also evaluate the level of physical activity of patients with before attack by CVA, to identify the association between socioeconomic statuses with diagnosis of CVA and to know the association between different level of physical activity (workload, sports, walking) and diagnosis of CVA. It will enrich our knowledge about the preventive measures of stroke and management of stroke patients among the Bangladeshi population.

Methodology

Study design and place and sampling

The study was conducted at Centre for the Rehabilitation of the Paralysed (CRP)'s Stroke Rehabilitation Unit both in CRP Savar and CRP Mirpur. CRP is national voluntary rehabilitation centre in Bangladesh where a lot of stroke survivors seeks post stroke treatment and rehabilitation either as an inpatients or outpatients basis. Participants were selected purposive sampling (non probability sampling) method. Patients who were suffering from CVA both acute and chronic, age above 20 years both male and female, having good communication skills and memory were included in the study. Patients with severe cognitive or perceptual problems were excluded from the study.

Data collection, processing and analysis

Face to face interview with semi-structured questionnaire for individual patients by the researcher himself or assigned responsible individual with prior instruction. Data was analyzed with the software named Statistical Package for Social Sciences (SPSS) version 16.0. Data were numerically coded and captured in Microsoft Excel, using an SPSS 16.0 version software program. Microsoft Office Excel 2007 was used to decorate the bar graph charts. Besides, data were cleaned and edited by running frequency, cross tabulation and logical checks. Data processing was done by coding, recoding, sorting, categorizing, computing etc. Kuppuswamy's SES classification was used for measuring the socio-demographic classification (Updated 2005). Measurements habitual physical activity was measured by standard questionnaire.

Ethical consideration

Research proposal was approved by ethical review committee of ASA University isnd CRP. All the participants and authority were informed about the purpose of the study, the process of the study and their written consent were taken. Interviews were taken in a confidential to maximize the participant's comfort and feelings of security.

Results and Observation

Total 135 participants were included in the study. Mean ± SD of age was 53.1±12.7 with a range from 20 to 80 years. Among the respondents 15.6% (n=21) were in the age group of 20-43 years, 28.1% (n=38) were in the age group of 45-52 years, 21.5% (n=29) were in the age group of 50-58 years and 34.8% (n=47) were more than 58 years. Among the participants more than three fourth (76.3%) (n=103) were male and 23.7% (n=32) were female. In education 19.3% (n=26) were illiterate, 9.6% (n=13) were under primary education, 19.3% (n=26) were completed primary education, 18.5% (n=25) were completed SSC, 9.6% (n=13) were completed HSC, 19.3% (n=26) were graduate and 4.4% (n=6) were professionals. In occupation 14.1% (n=19) participants were unemployed, 9.6% (n=13) non skilled, 28.1% (n=38) were semi skilled, 17% (n=23) were skilled, 6.7% (n=9) were semi professional, 16.3% (n=22) were professional and 8.1% (n=11) were other occupational group.

Monthly family income of 37.8% (n=51) participants were in between 5000-10000 BDT, 34.8% (n=47) were in between 11000-15000 BDT, 14.8% (n=20) were in between 16000-20000 BDT, 5.2% (n=7) were in between 21000-25000 BDT and 7.4% (n=10) participants were more than 25000 BDT. So it means that the 135 participants, 7.4% (n=10) participants were come from upper middle class, 30.4% (n=41) from lower middle class, 52.6% (n=71) from upper lower class and 10.8% (n=13) participants from lower class family.

Analysis showed that among the 135 participants, 3% (n=4) participants had much heavier work load in relation to other, 19.3% (n=26) had heavier workload, 37.8% (n=51) had as heavier workload, 37% (n=50) had lighter workload and 3% (n=4) participants had much lighter workload in relation to other. It has shown in their working area that among the 135 participants, 1.5% (n=2) were never sit during work, 8.1% (n=11) were seldom sit during work, 48.1% (n=65) were sometimes sit during work, 36.3% (n=49) often sit during work and 5.9% (n=8) were always sit during work. 14.1% (n=19) were seldom stand during work, 67.4% (n=91) were sometimes stand during work, 13.3% (n=18) were often stand during work and 5.2% (n=7) were always stand during work. Also 3% (n=4) were never walk during work, 23.7% (n=32) were seldom walk during work, 57.8% (n=78) were sometimes walk during work, 11.9% (n=16) often walk during work and 3.7% (n=5) were always walk during work. 21.5% (n=29) were never weight bear during work, 26.7% (n=36) were seldom weight bear during work, 47.4% (n=64) were sometimes weight bear during work, 3.7% (n=5) often weight bear during work and 5.2% (n=7) were always weight bear during work.

Among the 135 participants, 6.7% (n=9) were never watching TV during leisure, 13.3% (n=18) were seldom watching TV during leisure, 41.5% (n=56) were sometimes watching TV during leisure, 32.6% (n=44) were often watching TV during leisure and 5.9% (n=8) were always watching TV during leisure. 8.9% (n=12) were never walking during leisure, 13.3% (n=18) were seldom walking during leisure, 54.8% (n=74) were sometimes walking during leisure, 20% (n=27) were often walking during leisure and 3%

(n=4) were always walking during leisure. Also 48.1% (n=65) were never play sports during leisure, 25.2% (n=34) were seldom play sports during leisure, 20.7% (n=28) were sometimes play sports during leisure and 5.9% (n=8) were always playing sports during leisure. Among the 135 participants 77 had left side hemiplegic and 58 were right side hemiplegic. Participants who had CVA with LSH, 61 were male and 16 were female. On the other side respondents who had RSH, 42 were male and 16 were female. There is no relationship between gender and diagnosis of CVA because x^2 = 0.848 > P= 0.05. Among the all respondents who had CVA with LSH, 6participants came from upper middle class family, 20 respondents from lower middle class, 44 participants from upper lower class and 7 participants from lower class. Among the respondents who had CVA with RSH, 4 participants came from upper middle class family, 21 respondents from lower middle class, 27 participants from upper lower class and 6 participants from lower class. There is no relationship between Kuppuswamy's SES Classification and diagnosis of CVA because x^2 = 1.936 > P= 0.05 **(Table 1)**.

Discussion

Evidences have found that age is the one of risk factors for stroke more aged persons are more prevalence to suffer from stroke. This study found that among the 135 participants who were suffering from CVA most of participants (34.8%) were >58 age group and less participants (15.6%) in between 20-48 years of age group. Kurl S, et al. [8] found that persons aged ≥60, suffered multi morbidity diseases for instance stroke is one of them. Dolee C, et

Table 1 Distribution of sociodemograhic characteristics of the participants.

Variables	Frequency	Percentage
Age		
20-43 years	21	15.6
45-52 years	38	28.1
55-58 years	29	21.5
> 58 years	47	34.8
Mean ± SD (Range)	53.1 ± 12.7 (20-80)	
Sex		
Male	103	76.3
Female	32	23.7
Educational Status		
Illiterate	26	19.3
Under primary	13	09.6
Completed primary	26	19.3
SSC completed	25	18.5
HSC completed	23	09.6
Graduate	26	19.3
Professional	06	04.4
Monthly Family Income		
5000-10000 BDT	51	37.8
11,000-15,000 BDT	47	34.8
16,000-20,000 BDT	20	14.8
21,000-25,000 BDT	07	05.2

al. [9] showed that more than 60 years are more suffer from CVA than the young age less than 60 years. Therefore, the number of aged person are increasing alongside with the increasing people life expectancy both developed and developing nations cause the prevalence of stroke also increasing in the community. According to Dettmann MA, et al. [10], the incidence of stroke rises rapidly with increasing age. In The United States of America, the incidence of stroke is greater in males than in females and also it is twice as high in black communities as white. Ellekjaer EF, et al. [11] report that the incidence and the differences in age could be the same in Bangladesh.

Besides, by this study researcher have found that male were most (76.3%) sufferers than the female. As the evidence shows that male are more prominent to stroke then female. It has been stated by Sare GM, et al. [12] that 56.3% participants were male who had suffered from CVA with LSH whereas 43.7% were female and 45.5% male suffered from CVA with RSH whereas 54.5% were female.

Among the 135 participants, most of the participants 28.1% were semi skilled and less of the participants 6.7% were semi professional and 16.3% were professionals. In addition it also found that 14.1% unemployed had stroke. One study have indicated and supported by Simmons J and Barris R [13] that most of the participants 45.7% were semi-skilled persons and 21% were professionals who had suffer from CVA. However, a study carried out by Robert D, et al. [14] that education and occupation had the strongest associations with cardiovascular risk factors, inspite of education seemed to be most important among men, while among women income seemed to be an additional important determinant of risk factors. Veis S and Logemann J [15] said marital status did not contribute to the risk factors; education seems to be a relatively stronger indicator in evaluating the association between SES and cardiovascular risk factors.

It has shown deep perception among the people that those who are more educated and professionals they earn more and can live in the upper class society. Therefore, study showed that among the all participants more than half of the participants (52.6%) were come from upper lower class then 30.4% (n=41) from lower middle class consequently 10.8% (n=13) participants from lower class family and 7.4% (n=10) participants were come from upper middle class. So it is clear that upper middle class people suffer less the other group of people. Evidences have shown that there is a strong relation between socioeconomic status and stroke. Similar studies Tyroler HA [16] have found that 45.4% participants were come from upper middle class, 23.7% from lower middle class, 12.2% from upper lower class and 18.7% participants from lower class family. Overall, people with lower SES tended to have higher levels of cardiovascular risk factors. Men with higher SES tended to have lower mean blood pressure levels and had lower relative risks group. Further a large number of studies relating SES and the three cardiovascular risk factors have been carried out in developed countries.

On the other hand, it shows by analyzing the habitual physical activities participants, less participants 3% had much heavier work load in relation to other and most of the participants 37.8% had as heavier workload in relation to other. It is argued by Pang MY, et al. [17] that 55.7% participants suffered from CVA who had light workload and 44.3% participants suffered from CVA who had heavier work load in relation to other.

In addition, researcher also examine the activities during leisure time includes walking, cycling or sports, therefore, it has found that during leisure activity among the participants 48.1% never attend any kind of sports where 20.7% attended sometimes. Besides, only 5.9% of participants had stroke that often used to play sports during leisure time. It has been argued by Carvalho C, et al. [18] that among the people who had CVA most of the participants 56.4% had no history of walking and 52.3% had lead sedentary life style. Moreover, it is found that walking during leisure time maximum 54.8% (n=74) used to walk sometimes walking whereas only 3% (n=4) had stroke who always used to walk.

Moore SA, et al. [19] suggest that sedentary life style for example watching TV maximum 41.5% (n=56) were sometimes watching TV during leisure and 32.6% (n=44) were often watching TV during leisure. A physically active lifestyle reduces the risk of all-cause mortality and chronic disease, including stroke. In contrast, physical inactivity (not a lack of physical activity but a prevalence of sedentary behavior such as sitting or lying) reduces life expectancy and increases the risk worldwide of cardiovascular and metabolic diseases by up to 10%.

Among the 135 participants, 6.7% (n=9) were never watching TV during leisure, 13.3% (n=18) were seldom watching TV during leisure, 8.9% (n=12) were never walking during leisure, 13.3% (n=18) were seldom walking during leisure, 54.8% (n=74) were sometimes walking during leisure, 20% (n=27) were often walking during leisure and 3% (n=4) were always walking during leisure. Also 48.1% (n=65) were never play sports during leisure, 25.2% (n=34) were seldom play sports during leisure, 20.7% (n=28) were sometimes play sports during leisure and 5.9% (n=8) were always playing sports during leisure. Study has suggested by Bernspng & Fisher that there is a positive association between leisure time physical activities with CVA [20].

Conclusion

The proportion of the population classified as physically active in its leisure time is positively related to SES as indicated by income, education, and occupation. Results of this study explore the importance of physical activity in daily life. This study also indicates that most of the independent risk indicators associated with physical inactivity in the population. Further, it is expected that his study information would assist the public health professionals to identify the area to be concerns and raise awareness among the population about the physical activity.

Recommendation

This study recommended that further studies should test these relationships in broad settings including a large number of sample size from different places. Besides, it is also suggested

that alternative study designs should be considered to carry out the research purpose; in particular, longitudinal studies and intervention studies might provide greater ability to detect associations between these variables.

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