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Muhammad Essa
Bolan medical complex hospital Quetta Pakistan

Amanullah Kakar
Bolan medical complex hospital Quetta Pakistan

Dr Gulandam
Medical Unit 4, SPH Quetta Pakistan

Muhammad Saleem Barech
Bolan medical complex hospital Quetta Pakistan

Hina Imtiaz
Bolan Medical complex hospital Quetta Pakistan

See next page for additional authors

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Muhammad Essa, Amanullah Kakar, Dr Gulandam, Muhammad Saleem Barech, Hina Imtiaz, Sher zaman Mandokhail, and Muhammad Dawood

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Muhammad Essa[1*] **Amanullah Kakar**[1] **Gulandam**[1] **Muhammad Saleem Barech**[2] **Hina Imtiaz**[2] **Sher zaman Mandokhail**[3]
Muhammad Dawood[3]
[1]. *Syed Muhammad Essa department of neuro medicine Bolan medical complex hospital Quetta.*
[1]. *Aman-u-ullah kakar Associate professor department of neuro medicine Bolan medical complex hospital Quetta.*
[1]. *Gulandam Assistant professor medical Unit 4, SPH Quetta.*
[2]. *Muhammad Saleem Barech professor & Head of department of neuro medicine Bolan medical complex hospital Quetta.*
[2]. *Hina Imtiaz Department of neuro medicine Bolan Medical complex hospital Quetta.*
[3]. *Sher zaman Mandokhail Associate professor Department of ENT BMCH Quetta.*

Correspondence Author: Muhammad, Essa; dressakhan777@gmail.com *Department of neuro medicine BMCH Quetta,*

ABSTRACT

OBJECTIVE: Stroke is one of the leading causes of physical impairment and mortality worldwide. Optimizing preventive strategies will help decrease the burden of stroke. The objectives of this study were to determine common stroke risk factors, by analysing a comprehensive panel of variables in our local population.

METHODS: 200 patients were consecutively enrolled in this prospective observational study at stroke unit (SU) of Bolan Medical Complex Hospital over 6 months from March 2019 to August 2019. Structured questionnaires were prepared History and clinical examination were performed to gather relevant information. CT scan of brain was done to confirm the diagnosis of stroke. Other necessary tests were run.

RESULTS: A total of 200 patients were included in the study, of which 98 (49%) were males and 102 (51%) were females. Vascular risk factors were present in 182 patients (91%), of which the most common was hypertension in 121 patients (60.5%) followed by smoking in 89 patients (44.5%), diabetes in 62 patients (31%) and obesity in 58 patients (29%). Dyslipidaemia was present in 17 patients (8.5%), cardiac disease 14 patients (7.0%), ischemic heart diseases in 7 (3-5%), arterial fibrillation in 5 (2.5) and 5 (2.5) had a family history of stroke.

CONCLUSIONS: Hypertension was the most common stroke identified in this study, likely because of the great pervasiveness of this disease in our region. This study also highlights the prevalence of other vascular risk factors including smoking, diabetes mellitus, obesity, dyslipidaemia, and ischemic heart diseases in our community, which are associated with poor physical activity, low income, and poor health awareness. We suggest numerous community-based awareness programs in Baluchistan to improve local area perception about stroke and its risk factors.

KEYWORDS: Risk factors, acute stroke, Stroke severity, outcome

INTRODUCTION

WHO (World Health Organization) defines stroke as: "a neurological deficit caused by an acute focal injury of the central nervous system (CNS) by a vascular cause, including cerebral infarction, intracerebral haemorrhage (ICH), and subarachnoid haemorrhage and is a major cause of disability and death worldwide.

Stroke is classically characterized as, acute clinical event of local or central neurological deficit identified with lack of cerebral blood supply, which endures longer than 24h leading to death with no known cause other than vascular area. Lack of blood supply ,oxygen and to wash out by-products results the rapid dying of brain cells.[1].

Stroke is one of the most prevalent cause of severe, physical impairment and everlasting neurologic weakness around the world[2], and major cause of mortality worldwide[3]. The typical clinical presentation of stroke is difficulty speaking, abrupt paralysis on one side of the body (arm, face, or leg), hazy and fuzzy vision in one or both eyes, abrupt weakness in walking, and unexpected serious headache[4] Recent studies have shown decrease in stroke incidence in Westerncountries, with a parallel increase in Asian countries[5]. Including Pakistan[6]. Although stroke is an acute illness, it occurs because of chronic risk factors linked to style of living. Better control of these variables would improve not only the rate of stroke but also mortality rates.[7]. Hypertension remains the major causes of ischemic and haemorrhagic stroke[8], with 1 of 3 individuals In Pakistan above the age 45 having's hypertension. The majority of these hypertensive individuals are incognizant of their disease because of poor knowledge[9]. Which is further propagates poor control of hypertension[10]. Diabetes remains the second major risk factor of stroke[11], with projection that, Pakistan will become the 4th most populous country in terms of diabetes[12] Pakistan has rare data of risk factors of stroke. Different reports have been highlighted in terms of stroke epidemiology. The number of strokes would be in millions in high population country which determines types of strokes and its risk factor. Pakistan is the most populous country in the world which is ranked as fifth position in the world having approximately 220.9 million population[13] and 12.34 million population in Baluchistan by 2017[14]. There are no sizeable community based epidemiologic studies on stroke from Pakistan and specially from Baluchistan province. The province of Baluchistan has an extensive area by its geography. It has approximately 43% of Pakistan. Due to various hurdles in the ways of treating health related issues, Baluchistan peoples do not contain enough economy to deal with. The low level of literacy issue has a great impact on the health rate of Baluchistan, especially regarding to stroke in terms of diabetes and hypertension as they are silent diseases. The overall aim of this study is to identify risk factors and predictors for incident fatal and non-fatal stroke or TIA, and for stroke types, by analysing a comprehensive panel of variables in our local population.

RATIONAL OF THE STUDY:

In Pakistan stroke diseases is developing rapidly that is responsible for mortality[15]. Mostly 40 -75 years old people are affected by stroke incidents. And below 40 years' rare cases of stroke may be found[16]. Diabetes has been previously reported as a common cause of stroke in Pakistan[17]. Other common risk factors in

Pakistan are age, ischemic heart disease, hypertension, and smoking. Stroke rates are equally found in male's and female's starting from the age at 40. This study will lead to consider an effort to scrutinize the direct and indirect effects of stroke incidents cause by different factors. This study was evaluated in neurological stroke unit department in BMC hospital Quetta. The Quetta contains only single stroke unit throughout Baluchistan due to lack of facilities and lack of focus in health educations. Thriving consumption of this study will lead to affirm those factors that is responsible for short- and long-term stroke incidents. This research will have both academic as well as effective platform if lead it in to accurate immanent. This study may be found out the exact risk factors to cause the stroke and find the better treatment and solutions to control the stroke problem. Eventually, this research will assist to stagnate several risk factors of strokes that will be effective for the doctors to prevent those factors causing stroke incidents.

RESEARCH QUESTIONS:

What are the main causes of stroke?
To what extent do smoking, diabetes and hypertension cause stroke?

OBJECTIVES OF THE STUDY:

 The objectives of the study are as follow.
People need to realize how might they keep away from stroke and diminishing its risk factors particularly the ones that can be controlled.

1: to explore the types of strokes
2: To determine the risk factors causing stroke
3: To determine the incidence of stroke among urban and rural population

SUBJECTS AND METHOD:

This study was conducted during March 2019 to August 2019 among 200 stroke patients admitted to Bolan medical complex hospital, Quetta. We concentrate on investigating risk factors including hypertension, diabetes, hyperlipidaemia, age, smoking and heart diseases. preceding stroke. Hypertension was characterized as systolic blood pressure $\geq$ 140 mmHg or diastolic $\geq$ 90 mmHg. Diabetes was characterized as a self-reported history of diabetes. Dyslipidaemia was characterized as a self-revealed doctor finding. Atrial fibrillation was characterized as any electrocardiographic proof of atrial fibrillation or self-reported doctor finding. Weight list (BMI) were measured and calculated with overweight defined as BMI $\geq$ 26 kg/m2. Structured questionnaires were prepared History and clinical examination were performed to gather relevant

information. CT scan of brain was done to confirm the diagnosis of stroke. Other necessary tests were run.

RESEARCH DESIGN AND METHODOLOGY:
Prospective observational study design was carried out at stroke unit (SU) of BMCH for 6 consecutive months from March 2019 to August 2019.

SAMPLE AND SAMPLING TECHNIQUE OF THE STUDY:
All the patients of stroke in stroke unit at BMC hospital are selected as sample for data collection. The sampling techniques was convenient sampling.

DATA COLLECTION TOOL:
The proposed study intends to adopt structured to muster primary data from the patients who suffer from stroke. Based on research objectives interview method was used to collect the data.

DATA PROCESSING AND ANALYSIS:
Collected data was analysed through SPSS with continuous variables reported as a range, mean and percentile frequencies. For comparing and ratio categorical data, chi-squared ($\chi2$) was done.

RESULTS:
CHARACTERISTICS OF PARTICIPANTS:
A total of 200 patients were included in the study, of which 98 (49%) were males and 102(51%) were females. Ten patients (5%) were 40 years or younger, 82 patients (41%) were between 40 to 60, 83 patients (41.5%) were from 60-80 years and 25 (12.5%) were older than 80. The highest prevalence of stroke was between the ages of 60 and 80years. Table no:1 contains these results.

AGE	FREQUENCY	PERCENT
20-40	10	5.0%
40-60	82	41.0%
60-80	83	41.5%
80>	25	12.5%
SEX DISTRIBUTION		
SEX	FREQUENCY	PERCENT
Male	98	49.0%
Female	102	51.0%
TOTAL	200	100.0%
Table 1: Age & Sex distribution		

Most of the patients were Pashtun by ethnicity 83(41.5%) or Baloch 75 (37.5%), followed by Urdu speaking were 27(13.5%), Persian in 11(5.5%) while 4(2%) were others. Among these 122 patients (61%) belonged to rural area and the remining 78 (39%) were from urban area. The literacy rate was very low with 154 (77%) illiterates, and only 31 (15.5) were high school graduates, 9 (4.5%) was bachelors, 6 (3%) were master's degree holders (Table 02).

EDUCATION	FREQUENCY	PERCENT
Master's	06	3.0%
Bachelor	09	4.5%
High school	31	15.5%
Illiterate	154	77.0%
Total	200	100.0%
Table 2: literacy rate		

Only Seven (3.5%) patients had a family history of stroke. Ischemic stroke was more common (n=106, 53%) than haemorrhagic (n=94 (47%).

BMI	FREQUENCY	PERCENT
30<	139	69.5%
30>	61	30.5%
STROKE TYPE		
Ischemic	106	53%
Haemorrhagic	94	47%
Table 3: BMI & Stroke type		

Socioeconomic profile analysis showed 128 patients (64%) from lower class, 66 33%) from middle class and remaining 6(3%) belongs from upper class.

Risk Factor		Frequency	Percent
Family history	**Male**	03	1.5%
stroke	**Female**	04	02%
	Total	07	3.5%
Hypertension	**Male**	55	27.5%
	Female	66	33%
	Total	121	60.5%
Diabetes	**Male**	31	15.5%
	Female	31	15.5%
	Total	62	31%
Smoking	**Male**	71	35.5%
	Female	18	09%
	Total	89	44.5%
Dyslipidaemia	**Male**	11	5.5%
	Female	06	03%
	Total	17	8.5%
Atrial fibrillation	**Male**	03	1.5%
	Female	02	01%

	Total	05	2.5%
Previous stroke	**Male**	16	08%
	Female	17	8.5%
	Total	33	16.5%
Ischemic heart disease	**Male**	08	04%
	Female	06	03%
	Total	14	7.5%
Obesity	**Male**	31	15.5%
	Female	27	13.5%
	Total	85	29%

RISK FACTORS:

Risk factors were present in 182 (91%) patients, the most common risk factor was hypertension 121(60.5%) (table 4), followed by smoking 89 (44.5%), diabetes with the incidence of 62(31%), obesity 58(29%), one hundred thirty-nine patients (69.5%) have BMI 30<. Whereas 7 (3.5%) patients have the family history of stroke, Dyslipidaemia was present in 17 patients (8.5%), cardiac disease 14 patients (7.0%), ischemic heart diseases in 7 (3-5%), arterial fibrillation in 5 (2.5) and 5 (2.5) had a family history of stroke. The forty-nine (24.5%) has one risk factor, 68(34%) presented with two risk factors while most of the population 65(32.5%) has been presented with three or more than three risk factors. One hundred forty-two (71.0) patients have only stroke and the most common disease found in the population other than stroke was asthma 26(13%), the 2nd most common was Tuberculosis 17 (8.5%), thyroid disease found in 8(4%), LV dysfunction in 3(1.5%), liver disease in 2(1%) and COPD and Epistaxis was found in one patient (0.5%) population, which indicates the higher prevalence rate of pulmonary disease in region (table 5)

Reach to hospital	FREQUENCY	PERCENT
Asthma	26	13.5%
COPD	01	0.5%
Epistaxis	01	0.5%
Liver Disease	02	1.0%
LV Dysfunction	03	1.5%
TB	17	8.5%
Thyroid	08	4.0%
Non	142	71.0%
Total	200	100.0%
Table 5: Diseases other then stroke		

In the previous drug profile, 58(29%) patients were taking NSAIDS, 29(14.5%) taking anti-depressants, 28(14%) taking anti platelets drugs, 25 (12.5%) were taking statins and 22 (11%) were the users of contraceptives. The 17(8.5%) reaches to hospital within 3hours, while 26(13%) reaches within 6 hours, 34(17%) reaches within 10 hours, majority of the patients 40(20%) reaches within 15 hours, 25(12.5) reaches within 20 hours, 33(16.5%) reaches within 24hours and 25(12.5%) patients reaches to hospital more than 24 hours.

Reach to hospital	FREQUENCY	PERCENT
Within 3 hours	17	8.5%
Within 6 hours	26	13.0%
Within 10 hours	34	17.0%
Within 15 hours	40	20.0%
Within 20 hours	25	12.5%
Within 24 hours	33	16.5%
More than 24 hours	25	12.5%
Total	200	100.0%
Table 06: Diseases other than stroke		

The morbidity rate was higher than mortality 171(85.5%) patients have been survived while 29(14.5%) patients died (Table 07).

Mortality	FREQUENCY	PERCENT
Survive	171	85.5%
Expired	29	14.5%
Total	200	100.0%
Table 07: Mortality rate		

DISCUSSION:

Stroke refers to any disease in which there is focal injury occur to the brain due to lack of blood supply, stroke has multiple aetiologies[18]. Many risk factors are involved in stroke the most common of which is hypertension, diabetes, dyslipidaemia, arterial fibrillation. The objectives of this study were to determine the frequency of risk factors of stroke in a patient presenting to BMCH hospital Quetta. The present study adds to the already published research evidence on the topic, the strength of the present study was its large sample size of 200 cases and a strict exclusion criterion. We also stratified the results to address various effects modifiers, in the present study hypertension was found to be the most frequent risk factor. Few recent studies investigated the same factors , recent study in east Asian countries by Young Dae Kim et al(2016) ported that hypertension is the most common risk factors for stroke[19]. Another study conduct by Sorganvi et al(2014) conducted in China found out the same results hypertension (OR=3.807), diabetes (OR=3.473 hypercholesteremia (OR=3.768), obesity (OR=2.471), smoking (OR=2.42), family history of stroke (OR=2.359)[20].

A case control study conducted at Nigeria and Ghana found out the same results with the percentage of 90•8% for hypertension, and 35•8% (25•3–46•2) for dyslipidaemia,[21]. In the present study we found hypertension the major risk factor of stroke with the statistics of 121(60.5%)p=0.214 the 2nd most common risk factor was smoking and diabetes our observation is in line with [8, 22] who reported the similar results. A significant finding in this research conveying new information, is that an undesirable dietary fat intake is a danger factor for stroke, showing that alteration of food propensities may assume a part in endeavours to bring down the stroke rate. Another finding is that obesity and dyslipidaemias currently increasing in our population which is very alarming situation in terms of stroke and other deadly diseases. We have recognized the main modifiable risk factors that record 91% related with stroke among individuals from Baluchistan biggest study done on stroke in Baluchistan ever. Dietary and financial variables appear to assume more significant act in tendency to stroke among the population in Baluchistan than other provinces. Extra Ordinary intake of meat, sodium chloride, and low utilization of green verdant vegetables were related with stroke. A nearly two time more risk of stroke has been accounted among the study population with self-revealed stress vs the population without anxiety and stress.in a whole, our study emphasizes the addition of different risk factors, for example, livelihood, underprivileged dietary nature, and stress as hazard components to stroke event among Baluchistan province, likely mirroring the impact of selection of western ways of life.

CONCLUSION:
Hypertension was the most common stroke identified risk in this study, likely because of the great pervasiveness of this disease in our region. This study also highlights the prevalence of other vascular risk factors including smoking, diabetes mellitus, obesity, dyslipidaemia, and ischemic heart diseases in our community, which are associated with poor physical activity, low income, and poor health awareness. We suggest numerous community-based awareness session in Baluchistan to improve local people perception about stroke and its risk factors and a public session to be arranged by local organization/health department to regulate significant risk factors like hypertension, smoking, diabetes, obesity, ischemic heart diseases and dyslipidaemia.

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