IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 6, Issue 4 Ver. IV. (Jul. -Aug .2017), PP 01-08
www.iosrjournals.org

Sickness profile for patients with stroke.

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Abstract: *Cerebrovascular stroke is a term that refers to a functional abnormality of the central nervous system (CNS) that occurs when the blood supply to the brain is disrupted. The stroke Adapted Sickness Impact Profile (SA-SIP30) is a useful measure, giving valuable information about the patients' subjective perceptions of their situation after stroke. The aim of the study was to explore the sickness profile for patients with stroke. A descriptive exploratory research design was utilized to achieve the aim of the study. A purposive sample of 45 stroke adult patients regardless gender, their age ranged from 25 to less than 60 years old, with confirmed diagnosis of stroke, conscious, able to communicate with the investigators were recruited in this study. The study carried out at the stroke unit affiliated to neurology departments at one of the university hospitals in Cairo governorate. Three tools were used to collect data pertinent to the study namely; Personal and Medical Background Information Form (PMBIF), A Stroke Adapted 30- Item Version of the Sickness Impact Profile (SA-SIP30), and Modified Rankin Scale (MRS). Results: The main study results revealed that the study subjects' mean age was 47.6± 10.8 years, (53%) were males, (75.6%) had no past history of stroke, (87%) had ischemic stroke, (66.7%) had co-morbidities as diabetes mellitus, hypertension and atherosclerosis. The less desirable outcome indicating dependent status before discharge regarding physical dimension subscales were body care, movement and mobility, regarding psychosocial dimension subscales were social interaction and emotional behavior. The desirable outcome indicating independent status three months after discharge regarding physical dimension subscales were body care, movement, mobility, and ambulation. Regarding psychosocial dimension subscales were alertness behavior and communication. Patients who didn't have past history of stroke had improved desirable outcome regarding sickness profile. Conclusion: Based on results of the present study, it can be concluded that there was outcome improvement, and independent status for both sub dimensions was shown among the studied subjects. Recommendations: Adequate updated knowledge about factors that determine the final outcome in terms of activities after stroke is important for stroke management.*
Keywords: *Stroke, Sickness Impact Profile, Modified Rankin Scale.*

Date of Submission: 16-06-2017 Date of acceptance: 05-08-2017

I. Introduction

Cerebrovascular disorders are a comprehensive term that refers to a functional abnormality of the central nervous system (CNS) that occurs when the blood supply to the brain is disrupted. Stroke can be classified into two major categories: ischemic, in which vascular occlusion and significant hypo perfusion occur, and hemorrhagic, in which there is extravasation of blood into the brain or subarachnoid space. Although there are some similarities between the two types of stroke, differences exist in etiology, pathophysiology, medical management, and nursing care [1].

The term 'stroke' is applied when an artery within the brain is blocked by a thrombus causing an ischemic stroke; or the artery bursts, causing a hemorrhagic stroke [2]. Health behaviors including diet, physical activity, smoking, and energy balance; health factors including blood pressure, cholesterol, and glucose, cardiovascular health; and a range of major clinical disease conditions including congenital heart disease, rhythm disorders, subclinical atherosclerosis, coronary heart disease, heart failure, valvular disease, and peripheral arterial disease are considered risk factors for stroke as reported by [3].

There is increasing evidence that medical complications are common sequelae after stroke, the most common complications were spasticity, depression, contractures, urinary and fecal incontinence, venous thromboembolism, pain, falls, pneumonia, and pressure ulcers. The timing of post-stroke complications is important in relation to the onset of stroke, as this will have an impact on prognosis and recovery [4].

Effective stroke therapy remains one of the most important tasks for neurologic patient care; stroke unit care is now part of most national guidelines for acute stroke management [5]. Knowledge about factors that determine the final outcome in terms of activities after stroke is important for early stroke management, to set suitable rehabilitation goals, enable early discharge planning, and correctly inform patients and relatives with the supporting information [6].

The Sickness Impact Profile (SIP) is a tool used to describe the dysfunction perceived by patients after disease. "Dysfunction" means the consequences of the impairments on a personal level, which limits or prevents the fulfillment of a role that is normal for individual. The stroke Adapted Sickness Impact Profile (SA-SIP30) is a useful measure, giving valuable information about the patients' subjective perceptions of their situation after stroke. This measuring tool requires good communicative capability, the patients with the most severe disabilities, with cognitive impairment or aphasia, could not take part [7].

1.1. Significance of the study

Stroke is a common cause of morbidity and mortality worldwide. Every year, fifteen million people worldwide suffer a stroke, nearly six million die and another five million are left permanently disabled. Globally, stroke is the second leading cause of death above the age of 60 years [8]. Four out of five strokes occurs in the low- and middle-income countries like Egypt. Stroke prevalence in developing countries about (5–10/1,000).Moreover, researches have shown that the Middle East region faces a double burden of stroke [9].

The overall prevalence rate of stroke in Egypt, is high with a crude prevalence rate of 963/100 000 inhabitants. In addition, the diseases of the circulatory system, including stroke, are the primary cause of death in Egypt and account for one third of all deaths, stroke accounts for 6.4% of all deaths and thus ranks the third after heart disease and gastrointestinal (especially liver) diseases, and followed closely by cancer 6.1%. Deaths attributable to stroke have remained relatively unchanged during the past ten years [10].

Stroke is the second leading cause of disability, after dementia. Disability may include loss of vision and / or speech, weakness, difficult bladder and bowel control, paralysis, confusion, difficult swallowing, aphasia, sensory loss, depression, inattention/neglect, unable to care for family in the same way as before, and broken up with their partner or considered doing so [11].

II. Material And Methods

The current study aimed to explore the sickness profile for patients with stroke. With this in mind, the following research questions were postulated:

Q1- What is the sickness profile of patients with stroke?
Q1.a - What is the sickness profile of patients with hemorrhagic stroke?
Q1.b - What is the sickness profile of patients with ischemic stroke?
Q1.c - What is the sickness profile of patients with stroke before discharge and three months after discharge?

2.1. Design

A descriptive/exploratory research design was utilized in the current study.

2.2. Setting

This study was conducted at the stroke unit affiliated to neurology departments at one of the university hospitals in Cairo governorate with total capacity of fifty beds per ward.

2.3. Sample

A purposive sample of 45 stroke adult patients (male and female), their age ranged from 25 to less than 60 years old, with confirmed diagnosis of stroke by computed tomography scan for brain, conscious and able to communicate with the investigator was recruited in the study. Patients with severe disabilities (motor response ≤ 3), cognitive impairment, or aphasia were excluded from the study sample. Data collection took around 9 months over a period from April to December 2016. At three months after stroke, three participants were lost-to-follow-up, and two participants died.

2.4. Data collection tools:

The investigator used three tools to collect pertinent data as followed. The study tools consisted of :

1-Personal and Medical Background Information Form (PMBIF), this tool consists of two parts: The first section included personal data such as age, gender, residence, education level, employment status, living status…etc. While, the second section included medical related data such as past history of stroke, type of stroke, diagnostic studies, co-morbidities ...etc.

2-A Stroke Adapted 30- Item Version of the Sickness Impact Profile (SA-SIP30) include 30 items. Each item is a statement describing a change in behavior that reflects the impact of illness on some aspect of daily life.

Patients were asked to choose items most descriptive of themselves on a given day. All responses are "yes" or "no".

3- Modified Rankin Scale (MRS), It is a 6-point, ordinal hierarchical scale that describes "global disability" with a focus on mobility. The six potential scores on the MRS (0–5) describe a full range of stroke outcomes, with a score of 6 usually added to denote death.

2.5. Pilot study

A pilot study was conducted on 10% of the sample to test feasibility of the study, as well as to examine issues related to the design, sample size, data collection procedures, and data analysis approaches. The pilot sample was included in the study.

2.6. Ethical considerations

An official permission to conduct the study was obtained from Research Ethical Committee at Faculty of Nursing – Cairo University as well as director of stroke unit. Written consent for patients' agreement was obtained after explanation of the nature and purpose of the study. Each patient was free to either participate or not in the current study and had the right to withdraw from the study at any time without any rationale and it will not affect upon care provided. Also, patients were informed that obtained data will not be included in any further researches. Confidentiality and anonymity of each subject were assured through coding of all data.

2.7. Procedure for data collection:

Once obtaining the formal approval, initial individualized interview was done for each participant of the study subjects who met the inclusion criteria to explain the nature and purpose of the study, and then a written consent was obtained for each subject who agreed to participate in the study. Then the investigators used the patients' medical records for 10 minutes to fill Personal and Medical Background Information Form.

After that each patient was asked to choose items most descriptive of himself; all responses were yes or no; it was the first time of filling out A Stroke Adapted 30- Item Version of the Sickness Impact Profile (SA-SIP30), it took 30 minutes to fill out for each patient, the second time was filled out three months follow-up by telephone after discharge. The investigators filled out Modified Rankin Scale twice; the first time before patients discharge from hospital and the second time three months follow-up by telephone after discharge.

2.8. Statistical analysis:

Obtained data were tabulated, computed and analyzed using Statistical Package for the Social Sciences (SPSS) program version 20. Descriptive and Inferential statistics were utilized, descriptive statistics included frequency, percentage distribution, mean and standard deviation, measure of dispersion for some variables, t-tests and ANOVA test were used.

III. Results

Results of the study are presented in two major sections; the first section is descriptive statistics that included the description of the personal and medical background information through two parts; the first part is devoted to describe the socio-demographic data as age and gender, residence, educational level, employment status and living status. The second part represented medical related data such as past history of stroke, type of stroke, diagnostic studies, and co-morbidities. The second section is inferential statistics that presents results related to answer the research questions.

Table (1): illustrated that (71%) of the studied subjects' age were 41 to 60 years old, with a mean age = 47.6±10.8 years, (53%) of the studied subjects were males, (67%) of the studied subjects were living in urban areas, (53%) of the studied subjects couldn't read or write, (97.8%) of the studied subjects were living with their families.

Table (1). Frequency and percentage distribution of the studied subjects as regards to personal background information (n=45).

Variables	N	%
• **Age**		
20-40 years	13	29
41-60 years	32	71
Mean± SD= 47.6±10.8		
• **Gender**		
Male	24	53
Female	21	47
• **Residence**		
Urban	30	67

Rural	15	33
• **Living status**		
Living alone	1	2.2
Living with family	44	97.8
• Educational level		
Can't read and write	24	53
Can read and write	8	18
Secondary education	5	11
High education	8	18

Table (2) showed that (75.6%) of the studied subjects had no past history of stroke, (87%) of the studied subjects had Ischemic stroke, (33.3%) of the studied subjects had no comorbidities diseases, while 28.9% had diabetes mellitus and hypertension.

Table (2). Frequency and percentage distribution of the studied subjects as regards to medical background information (n=45).

Variables	N	%
Past history of stroke		
No	34	75.6
Yes	11	24.4
Stroke type		
Ischemic	34	87
Hemorrhagic	6	13
Co-morbidities		
None	15	33.3
DM	3	6.7
DM+ HTN	13	28.9
HTN+ atherosclerosis	8	17.8
IHD	3	6.7
TIA	2	4.4
IHD+ TIA	1	2.2

DM=diabetes mellitus, HTN=hypertension, IHD=ischemic heart disease, TIA=transient ischemic attack

It was apparent from table (3) that there was no statistical significant difference between history of stroke, MRS score, physical dimension, and psychosocial dimension three months after discharge. Modified rankin scale (MRS) score related to subjects who had previous history of stroke were (55.6%), and (80.1%) for subjects who had no previous history of stroke, both indicating no significant disability despite symptoms; able to carry out all usual duties and activities ($\chi 2$ =3.7, p-value =.150). Physical dimension related to subjects who had previous history of stroke (55.6%), and (80.6%) for subjects who had no previous history of stroke, both were independent ($\chi 2$ =2.34, p-value =.126). Psychosocial dimension related to subjects who had previous history of stroke were (77.8%), and (83.9%) for subjects who had no previous history of stroke, both were desirable outcome ($\chi 2$ =.179, p-value =.672). There was statistical significant difference between type of stroke and sickness profile. Sickness profile related to subjects who had previous history of stroke were (55.6%), and (87%) for subjects who had no previous history of stroke, both were independent ($\chi 2$ =4.3, p-value =.037) respectively.

Table (3): Comparison of the studied subjects' scores of Modified Rankin Scale (MRS), total sickness profile, physical dimension, and psychosocial dimension three months after discharge in relation to history of stroke (n=40).

Variable	History of stroke				$\chi 2$	P-value
	Yes (n=9)		No (n=31)			
	N	%	N	%		
MRS						
-No symptoms at all	0	0	7	22.5		
-No significant disability.	5	55.6	18	80.1	3.7	.150
-Slight disability.	4	44.4	6	19.4		
Sickness profile						
Dependent	4	44.4	4	13	4.3	.037*
Independent	5	55.6	27	87		
Physical dimension						
Dependent	4	44.4	6	19.4	2.34	.126
Independent	5	55.6	25	80.6		
Psychosocial dimension						
Desirable	7	77.8	26	83.9	.179	.672
Less desirable	2	22.2	5	16.1		

*Significant at the $p \leq 0.05$probability level.

Table (4) showed that there was no statistical difference between stroke type, MRS score, and psychosocial score. Modified Rankin Scale (MRS) score related to subjects who had ischemic stroke were (48.7%) no significant disability despite symptoms; able to carry out all usual duties and activities and the same percentage had slight disability; unable to carry out all previous activities, but able to look after own affairs without assistance, and (83.3%) for subjects who had hemorrhagic stroke slight disability; unable to carry out all previous activities, but able to look after own affairs without assistance ($\chi 2$ =2.52, p-value =.283). Sickness profile for subjects who had ischemic stroke and subjects who had hemorrhagic stroke were (100%) dependent. Physical dimension related to subjects who had ischemic stroke and subjects who had hemorrhagic stroke were (100%) dependent. Psychosocial dimension related to subjects who had ischemic stroke were (97.4%), and (100%) for subjects who had hemorrhagic stroke, and both had less desirable outcome ($\chi 2$ = .157, p-value =.692).

Table (4): Comparison of the studied subjects' scores of Modified Rankin Scale (MRS) score, total sickness profile, physical dimension, and psychosocial dimension, before discharge in relation to stroke type (n=45).

Variable	Stroke type				$\chi 2$	P-value
	Ischemic (n=39)		Hemorrhagic (n=6)			
	N	%	N	%		
MRS						
-No symptoms at all	1	2.6	0	0		
-No significant disability.	19	48.7	5	66.7		
-Slight disability.	19	48.7	1	83.3	2.52	.283
Sickness profile						
Dependent	39	100	6	100	NS	NS
Independent	0	0	0	0		
Physical dimension						
Dependent	39	100	6	100	NS	NS
Independent	0	0	0	0		
Psychosocial dimension						
Desirable	1	2.6	0	0	.157	.692
Less desirable	38	97.4	6	100		

*Significant at the $p \leq 0.05$probability level, NS = not statistically significant.

Table (5) illustrated that there was no statistical difference between stroke type, MRS score, sickness profile, and psychosocial dimension Modified Rankin Scale (MRS) score for subjects who had ischemic stroke were (55.9%), and (66.7%) for subjects who had hemorrhagic stroke, both indicating no significant disability despite symptoms; able to carry out all usual duties and activities ($\chi 2$ =2.87, p-value =.237). Sickness profile for subjects who had ischemic stroke were (76.5%), and (100%) for subjects who had hemorrhagic stroke were, both were independent ($\chi 2$=1.76, p-value=.184). Psychosocial dimension for subjects who had ischemic stroke were (79.4%), and (100%) for subjects who had hemorrhagic stroke, both had desirable outcome and independent status ($\chi 2$=1.49, p-value=.221). There was significantly statistical difference between stroke type and physical dimension. Physical dimension related to subjects who had ischemic stroke were (70.6%), and (100%) for subjects who had hemorrhagic stroke, both were independent ($\chi 2$ =2.3, p-value =.012) respectively.

Table (5): Comparison of the studied subjects' scores of Modified Rankin Scale (MRS), total sickness profile, physical dimension, and psychosocial dimension, three months after discharge in relation to stroke type (n=40).

Variable	Stroke type				$\chi 2$	P-value
	Ischemic (n=34)		Hemorrhagic (n=6)			
	N	%	N	%		
MRS						
-No symptoms at all	5	14.7	2	33.3	2.87	.237
-No significant disability.	19	55.9	4	66.7		
-Slight disability.	10	29.4	0	0		
Sickness profile						
Dependent	8	23.5	0	0	1.76	.184
Independent	26	76.5	6	100		
Physical dimension						
Dependent	10	29.4	0	0	2.3	.012*
Independent	24	70.6	6	100		
Psychosocial dimension						
Desirable	27	79.4	6	100	1.49	.221
Less desirable	7	20.6	0	0		

*Significant at the $p \leq 0.05$ probability level.

It was clear from table (6) that there was no statistical significant difference between subjects' co-morbidities and MRS score, sickness profile, physical dimension, and psychosocial dimension. Modified Rankin Scale (MRS) score for subjects who had previous co-morbidities were (66.7%), and (38.5%) for subjects who had no co-morbidities, both had no significant disability despite symptoms; able to carry out all usual duties and activities, while (38.5%) of subjects who had no co-morbidities, had no symptoms at all ($\chi 2$ =19.6, p-value =.075). Sickness profile for subjects who had co-morbidities were (77.8%), and (84.6%) for subjects who had no co-morbidities, both were independent ($\chi 2$ =9.34, p-value =.155). Physical dimension related to subjects who had co-morbidities were (74.1%), and (77%) for subjects who had no co-morbidities, both were independent ($\chi 2$ =4.92, p-value =.554). Psychosocial dimension for subjects who had co-morbidities were (77.8%), and (92.3%) for subjects who had no co-morbidities, both had desirable outcome and independent status ($\chi 2$ =7.81, p-value =.252).

Table (6): Comparison of the studied subjects' scores of Modified Rankin Scale (MRS), sickness profile, physical dimension, and psychosocial dimension three months after discharge in relation to co-morbidities (n=40).

Variable	Co-morbidities				$\chi 2$	P-value
	Yes (n=27)		No (n=13)			
	N	%	N	%		
MRS						
-No symptoms at all	2	7.4	5	38.5		
-No significant disability.	18	66.7	5	38.5	19.6	.075
-Slight disability.	7	25.9	3	23		
Sickness profile						
Dependent	6	22.2	2	15.4	9.34	.155
Independent	21	77.8	11	84.6		
Physical dimension						
Dependent	7	25.9	3	23	4.92	.554
Independent	20	74.1	10	77		
Psychosocial dimension						
Desirable	21	77.8	12	92.3	7.81	.252
Less desirable	6	22.2	1	7.7		

*Significant at the $p \leq 0.05$probability level.

IV. Discussion

Based on the current study a total of 45 patients with stroke were recruited from the stroke unit. At three months after stroke, three participants were lost-to-follow-up, and two participants died. This finding was consistent with [12], where a total of 532 consecutive patients with stroke were recruited from the multidisciplinary rehabilitation units, six months after stroke, 77 participants were lost-to-follow-up: 18 died, 54 refused to participate, and five could not be assessed (missed assessment or poor medical condition).

It was observed that the majority of the studied subjects' ages ranged between 41 to 60 years old with a mean age = 47.6 ±10.8 years, it could be matched with [13], that ages of their sample ranged from 35 to 71 years with a mean age of 55.3±8.2 years, also it could be relatively matched with [14] who reported that the average age was 54.7 ± 12.5 years. It also could be relatively matched with [15] who added that the average age was 57.40±12.50 years. On the other hand, [16] mentioned that mean age was 63.3±14.9 .

In this study it was observed that more than half of the studied subjects were males. Sex hormones affect different pathophysiologic functions of the cerebral circulation. Premenopausal women experience fewer strokes than men of comparable age, stroke rates increase among postmenopausal women compared with age matched men. These results were consistent with [13] who reported that (62%) of their studied sample were males, and also were consistent with [17] who reported that (52.1%) of the patients were males, either [14] stated that (63.8%) of the patients included in the study were male. On the contrary [18] reported that (52%) of study subjects were females. Concerning residence of the study subjects, it was revealed that more than two thirds of the study subjects were urban inhabitants; these results could be matched with [19] who reported that the lifetime prevalence rate of nonfatal stroke in Al-Kharga district in Egypt was higher in urban than rural inhabitants (prevalence rate was 5.6 per 1,000. Regarding patients' educational level, it was found that more than half of the studied subjects can't read or write. These findings were relatively congruent with [15] who found that (65.4%) couldn't read or write. These findings didn't agree with [14] who reported just over three in five patients (61.33%) had achieved at least their secondary school diploma . In relation to living status it was found that almost all studied subjects were living with their families, from the investigator′s point of view, families in Egypt provide social support which play an important role with their diseased family member. In line with the current study findings [15] noticed that (94.2%) of the study subjects were mostly married and living with their families, moreover [14] found that more than half the patients were living with their family.

As regards past history and type of stroke, the current study findings revealed that more than three fourth of the studied subjects didn't have past history of stroke, (87%) had ischemic stroke and the remaining (13%) had hemorrhagic stroke. Similarly [20] mentioned that ischemic stroke constitutes (85 – 87 %) of all cases while [21] added that hemorrhagic stroke is responsible for (9 to 27%) of all strokes worldwide. These findings were supported by [13] who reported that all included patients in the study had a first-ever-in-a-lifetime stroke; cerebral ischemic stroke was detected in (72%) patients, and cerebral hemorrhage in (36%) patients. Whereas, [17] reported that all included patients with stroke with a first-ever stroke, (86.1%) had ischemic stroke and about (11%) had hemorrhagic stroke, these findings were relatively congruent with the current study findings In line with these findings, [18] reported that (100%) of the studied subjects were patients with first-ever-lifetime stroke both subtypes (ischemic and hemorrhagic). Moreover, [22] mentioned that (90.6%) had ischemic stroke, whereas only (9.4%) had hemorrhagic stroke.

Concerning co-morbidities, the current study indicated that one third of the studied subjects had no any previous co-morbid diseases, more than one fourth had diabetes mellitus and hypertension, and less than one fifth had hypertension and atherosclerosis. These findings are consistent with [17] who noticed that (26%) of the study subjects did not have any previous comorbid disease, whereas (66.5%) had hypertension. It may be also consistent with [13] who reported that diabetes mellitus was one of the most common comorbidities (36%) of the studied sample. Also [16] in their study indicated that more than two thirds of the studied subjects had hypertension and hypercholesterolemia. In this context [23] reported that (65.8%) of participants had hypertension.

The current study demonstrated that there was statistical significant difference between history of previous stroke and sickness profile three months after discharge, as (87%) of the study subjects who didn't have any previous history of stroke had favorable (desirable) outcome (independent in their activities) regarding sickness profile. These findings were relatively consistent with [17] who noticed that one third of the patients with first-ever stroke who survived the first three months after a stroke were independent in their activities of daily living. On the contrary [18] reported that three months after first-ever stroke, more than 40% of patients had a poor outcome, defined as being dead, disabled, or institutionalized due to stroke.

In this study, there was statistical significant difference between hemorrhagic stroke and total physical score. A study by [22] supported this finding and commented that hemorrhagic stroke was associated with better stroke specific quality-of-life scores compared with ischemic stroke. Also [24] mentioned that (65%) of subarachnoid hemorrhage (SAH) survivors reported having good overall quality of life.

V. Conclusion

Based on results of the present study, it can be concluded that there was dependent status regarding physical dimension of Stroke Adapted 30- Item Version of the Sickness Impact Profile (SA-SIP30) and also psychosocial dimension except communication and alertness behavior subscales, while three months after discharge, there was outcome improvement, and independent status for both sub dimensions was shown among the studied subjects.

VI. Nursing Implications And Recommendations

1. Multidisciplinary team should be collaborated in management of stroke patients and helped them to prevent and manage complications.
2. Multidisciplinary team should observe for early signs of mild cognitive impairments and emotional needs of stroke survivors.
3. Updating nurses' knowledge who are working in stroke units through attending in services training program, seminar, workshop and scientific conference regarding application of evidence based practice while dealing with patients.
4. Longer-term interventions may be needed to enhance post stroke quality of life.
5. Replication of the study using a larger probability sample acquired from different geographical areas.
6. A longitudinal study should be designed to determine the long term and the effect over a longer period of time.

Acknowledgment

My deep appreciation and thanks goes to patients, medical staff, and nurses in neurology and stroke unit in the Hospital affiliated to Cairo University for their co-operation and positive response.

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Dina Ebrahim Abd-Alsattar. "Sickness profile for patients with stroke." IOSR Journal of Nursing and Health Science (IOSR-JNHS) 6.4 (2017): 01-08.