Factors Relating to the Expectations and Perceptions of Post-Stroke Outpatients' in the Rehabilitation Services of Bangladesh

Mohammad Shaikhul Hasan[1,2,*], Kantabhat Anusaksathien[1], Kanida Narattharaksa[1] and Nahar Afrin[3]

[1]*College of Health Systems Management (CHSM), Graduate School, Naresuan University, Phitsanulok-65000, Thailand*

[2]*Research, Monitoring & Evaluation Department, Center for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka-1343, Bangladesh*

[3]*Speech and Language Therapy Department, Center for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka-1343, Bangladesh*

Abstract: *Purpose*: For enhancing patients' participation, this study aims to identify the patient-related factors that relate to the expectations and perceptions of post-stroke outpatients' in the rehabilitation services of Bangladesh.

Methods: A questionnaire survey was administered to 342 outpatients from the stroke rehabilitation department. Descriptive statistical analysis was applied to measure patients' perceptions and expectations. Eta statistic from ANOVA was applied to examine the relationship between patient-related factors and the patients' expectations and perceptions of the rehabilitation services.

Findings: Patients' expectations rated higher than the perceptions in all the dimensions of rehabilitation services. Factors such as; (i) patients' education (0.222, $p=0.005$) and post-stroke disability (0.447, $p<0.001$) indicated a significant relationship with patients' expectations. (ii) Patients' education (0.210, $p=0.010$), occupation (0.226, $p=0.003$), family status (0.180, $p=0.048$) and daily activities before the stroke (0.169, $p=0.044$), post-stroke disability (0.195, $p=0.004$) and distance from home to the hospital (0.190, $p=0.006$) indicated a significant relationship with their perceptions in the rehabilitation services.

Conclusion: The findings of this study concluded that the rehabilitation manager needs to work on these factors and recommended developing a continuing education program to minimize these factors of poor perceptions in the rehabilitation services.

Keywords: Expectation, Perception, Post-stroke, Rehabilitation.

INTRODUCTION

Patients' are health care service consumers and healthcare providers should always think to ensure high-quality services to attain better perceptions of the patients. World Health Organization (WHO) has been working worldwide to strengthen health systems by addressing better patient perceptions with the quality of services [1]. Globally, it is a very common challenge for health systems management, and the developed countries emphasise patients' priority for improving the quality of healthcare services. The maintenance of quality healthcare services is also a common challenge that has been experienced in developing countries [2]. The people of the developing countries have become aware of the disease conditions where patient expectations need to be managed in the healthcare service delivery. The healthcare service systems of Bangladesh have been facing the same challenges as a developing country. Particularly, the public healthcare services in Bangladesh have attained users' disappointment in terms of overall service quality [3]. Most importantly, unavailability or absence of medical doctors and staff negligence toward the patients are important indicators for accomplishing poor perceptions of the patients.

In the year 2015, the healthcare system of Bangladesh has achieved the Millennium Development Goal Four (MDG-4) [4] but, has challenges to control life-threatening non-communicable diseases (NCDs) diseases [5]. These kinds of NCDs are consequences of unexpected death and long-term disability in Bangladesh [6]. In terms of disability, the majority as 80% of stroke survivors are living with either minor or major physical, emotional, and cognitive disabilities [7]. Universal health coverage (UHC) targets achieving sustainable development goals by ensuring rehabilitation services for people who have limitations in their daily physical, mental and social activities due to diseases or disorders or chronic injuries [8]. Subsequently, the National Stroke Association [9] claimed that they could get back to their functional life

*Address correspondence to this CHSM, Graduate School, Naresuan University, Phitsanulok-65000, Thailand; R, M & E Dept, CRP, Savar, Dhaka-1343, Bangladesh; Tel: +8801813886046; Fax: 7745069; E-mail: researchassociatecrp@gmail.com

through comprehensive rehabilitation services. The government of Bangladesh has given priority to developing healthcare sectors by following Primary Health Care (PHC) approach. According to the Ministry of Health and Family Welfare [10], geographically it is divided into eight divisions and the total land area of this country is 147,570 sq. km. These divisions are divided into 64 districts and 507 upazilas (sub-district). There are 491 Upazila health complex hospitals and 3134 Union Sub-centers at the primary care level to provide in-patient and out-patient services. There are 13,336 community clinics for serving maternal and child-related outdoor primary care services with basic medicines. Particularly, these centers are not committed to provide rehabilitation services and ministry of social welfare is solely responsible for serving rehabilitation services throughout the country and Centre for the Rehabilitation of the Paralysed (CRP) is the only organization that have been renowned as a rehabilitation hospital in Bangladesh [5]. Besides, Biswas *et al*. [11] reported that the Upazila health complex with the cooperation of NGOs have been running a NCDs corner (i.e. fast-track corner) at the primary care level of Bangladesh to prevent the risk factors of NCDs. Consequently, due to lack in healthcare personnel of the public sector, the NGOs are providing community-based rehabilitation services at this primary care level with free of charge.

An estimated 10% of the total population in Bangladesh are having any kind of disability and stroke is the second leading cause of death and long-term disability in this country [7]. Substantially, very limited information is available on rehabilitation services in this country and Mamin *et al*. [12] said that not-for-profit and for-profit non-government organizations (NGOs) and some donor-funded organizations have been serving rehabilitation services but, they are facing challenges to provide rehabilitation services as well as managing the patient expectations in the rehabilitation care of Bangladesh. Due to this, patient participation in rehabilitation care has become a big challenge, as consequence, it increases the burden of stroke disability [4]. Ahmed, Quadir, Rahman, and Alamgir [13] reported that the persons with disabilities (PWDs) in this country are experiencing several barriers to fulfilling their needs, and the public and private organizations of this country should think about the PWDs in order to develop a disability-friendly environment so that they can access all the facilities as he/she required. Also, Uddin, Islam, Rathore, and Connell [14] reported that the PWDs are not satisfied

due to user-friendliness barriers in social activities and a lack of access to medical and rehabilitation services from public and private hospitals. The empirical evidence also claimed that the persons with disabilities (PWDs) in Bangladesh are always experiencing negligence from the healthcare professionals and struggling to meet their healthcare needs [15]. Recently, Mohiuddin [16] reported that people in this country are now concerned about their healthcare needs and are moving abroad due to the loss of healthcare guarantees in Bangladesh. These are the scenario of public and private healthcare sectors of Bangladesh and it's time to identify the causal factors of unconvinced expectations in the rehabilitation services of Bangladesh to achieve SDGs. Therefore, this study aims;

1. To identify the patient-related factors that relate to the expectations and perceptions of post-stroke outpatients' in the rehabilitation services of Bangladesh.

Measurement Models

Patient expectations or desired healthcare facilities are important to manage for an ever-increasing improvement in healthcare services. Quality in healthcare services is defined as "the meeting or exceeding of patient expectations" [17].

In measuring the patient experience in healthcare services, A. Parasuraman *et al*. [18] proposed a five-dimensional model to measure the expectations and perceptions of the patients after receiving any services. This model is also known as a SERVQUAL model, because, it measures the service quality gaps. The five-dimensional SERVQUAL models showed significantly valid and reliable data of the healthcare services [19-21]. Furthermore, Carman [22] preferred six dimensions instead of the five dimensions of Parasuraman *et al*. The cost of the services was added as the sixth dimension to measure the patients' experience. Choi *et al*. [23] mentioned an extra item besides the five dimensions such as waiting for time and procedure of getting services from the hospitals.

Andaleeb *et al*. [24] conducted a study in Bangladesh about the factors relating to patient's satisfaction in healthcare and indicated that the cost and availability of the service of the medical professionals are important indicators of poor patients' perceptions in the healthcare services. In the year 2009, the National Health System (NHS) in the UK

developed the Patient-Reported Outcome Measurement (PROM) scale to evaluate stroke patients' outcomes [25]. Regards, the NHS health policy emphasizes more on patient experience to measure quality care, alongside effectiveness and safety. Togher *et al*. [26] proposed Patient Reported Experience Measures (PREMs) to examine patients' experiences with healthcare services. These two measurement tools are increasingly being seen as valuable for assessing patient outcomes and differences in quality between health care providers. Lee [27] proposed the HEALTHQUAL and it comprises five dimensions to measure the patients' experience in healthcare services. These dimensions are quite similar to the dimensions of SERVQUAL.

In this regard, SERVQUAL is the most preferred method to measure the patients' experience in rehabilitation services, and Bobocea *et al*. [28] claimed that it is the most widely accepted and used model specifically for the healthcare sector. It gives more significance and valid information during the investigation of healthcare services [29]. Perhaps, only the SERVQUAL has been used in assessing the patients' experience in the rehabilitation services [30] and revealed that the SERVQUAL scale is the most valid and reliable tool to measure patient expectations and perceptions in the rehabilitation services.

Healthcare Services and Patient-Related Factors

Healthcare service delivery is the most important building block in the health systems and a positive patient experience intends a better health outcome, happier patient and provider, and better patient engagement in the healthcare services [31]. Mohiuddin [16, 32] illustrated some barriers such as; insufficient facilities, unavailability or shortage of medical professionals, long-distance to catch the services, short time consultation, disregard and negligence from the medical staff have determined patients' unhappiness or poor perceptions with the healthcare services of Bangladesh. Wherein, Sofaer and Firminger [33] reported that several factors such as; socio-demographic, the severity of illness, and distance of the hospital have induced to attain poor perceptions of healthcare services. Accordingly, Andaleeb *et al*. [24] also found that the cost and availability of the professionals significantly influenced to perceive poor patient perception of the healthcare services. Al Fraihi and Latif [20] found a negative gap between expected and perceived patient experience with outpatient healthcare services, and the result showed a significant association with the patient's age, gender, education, and the intensity of the hospital visits. Tekindal, Tekindal [34] applied the SERVQUAL method to assess patient experience in the physical therapy and
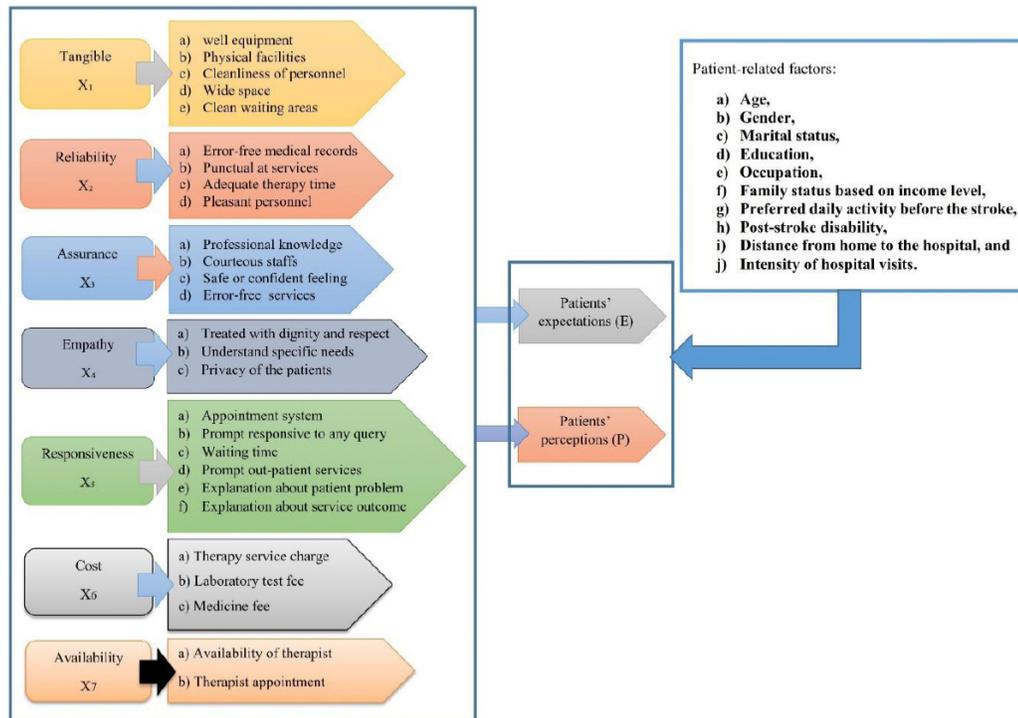
Figure 1: Conceptual framework of identifying factors relationship with expectations and perceptions of the patients in the rehabilitation services.

rehabilitation services and the findings indicated that the patients' perception is rated higher than the expectations. Though, patient's disability is greatly influence to the patients' perceptions in the rehabilitation services [35]. Figure **1** demonstrated the conceptual framework of this study. Whereas;

P = ΣX = Patients' perceptions

E = ΣX = Patients' expectations

ΣX = (X_1 + X_2 + X_3 + X_4 + X_5+ x6 + x7) = Overall score of the dimensions.

Methods and Subject

A cross-sectional study design was selected to find the answer to a research question in this study. The question was examined by following the empirical evidence of previous studies. The not-for-profit Centre for the Rehabilitation of the Paralyzed (CRP) hospital was selected as the context of this study. Post-stroke patients were the target population. The post-stroke means a group of conditions including; physical disability, emotional disturbance, and loss of cognition [36].

Based on the availability of rehabilitation professionals, the present study tried to cover the target sample size in a way to consider three types of rehabilitation service (i.e. physical, occupational, and speech and language therapy) oriented for all post-stroke patients from the outpatient's stroke rehabilitation unit. Therefore, this study divided three therapy units into three strata of proportionate stratified sampling. Wherein, the occupational therapy stratum was consisted of post-stroke patients for functional disability and cognitive impairment; physiotherapy for physical disability; and speech and language therapy for communication disabilities. Besides, the sampling criteria included: received outpatient rehabilitation services more than once (i.e. physical, occupational, and speech and language therapy), 20 years or above all post-stroke patients, not visiting other CRP branches for rehabilitation services, and have communication abilities. By considering the statistical formula of Charan and Biswas [37], this cross-sectional study selected 342 recipients of post-stroke rehabilitation services from the CRP hospital as a sample of this study. The statistical formula for sample calculation is presented as follows:

$$n = \frac{z^2 pq}{d^2}$$

According to the formula, n = sample size, Z = 1.96 the percentile of the standard normal distribution, p = the highest proportion of the total population, q = 1-p, and d = margin of error means the expected level of precision.

Then, the proportionate stratified sampling technique was applied in a way to determine the proportion of the sample population in each unit of the stroke rehabilitation department (i.e. physical, occupational, and speech and language therapy) as a stratum [38]. By considering the homogenous characteristics of the samples, this study chose 121 patients from the occupational therapy unit, 117 patients from the physical therapy unit, and 104 patients from the speech and language therapy unit to obtain the total samples of this study. The sampling period was three months; from June to August 2018.

Approval for conducting this study was sought from the International Research Board of the Naresuan University and the CRP hospital.

Questionnaire Design

A survey questionnaire was applied as the research instrument. By following the SERVQUAL model of Parasuraman, Zeithaml [18], this study developed the questionnaire related to rehabilitation services and added extra two dimensions along with the five dimensions of the SERVQUAL model. These two dimensions were therapy services cost and availability of the professionals.

The health system of Bangladesh has been facing challenges to ensure health insurance coverage for the citizen of this country. Simultaneously, due to the shortage of available medical professionals patients have to wait in a long queue and experienced poor perceptions of the healthcare services [10]. The medical services cost is the most important dimension that insists the patient perceive poor experience in the healthcare services [33]. As well as, the study by Donabedian [39], Carman [22], Andaleeb *et al.* [24], and Lee [40] also added the cost dimension as an extra dimension along with the five dimensions of SERVQUAL to measure the perceptions of services in line with this study. Therefore, to identify the factors relating to the exact problem of the context of this study, extra two dimensions were added to the five dimensions of the SERVQUAL. The rehabilitation services-oriented questions had two portions such as patient expectations and perceptions. Each portion contained seven dimensions such as:

1. Tangible: physical evidence of the services, therapeutic equipment, and cleanliness of the rehabilitation professionals.

2. Reliability: consistency of staffs' committed performance and patients' dependability on them.

3. Assurance: professional knowledge, courtesy of the staff, safe and confident feeling, and error-free services.

4. Empathy: provide services to the patient with dignity and respect, efforts to understand, and privacy of the patient.

5. Responsiveness: the willingness of professionals to provide the services, appointment system, prompt response, and easy and appropriate medical explanation.

6. Cost: therapy service charge, laboratory test fee, and medicine fee.

7. Availability: easy access to the services and service providers.

In total 27 paired questions and these questions were set serially based on the rehabilitation service delivery practice in the context of this study. A five-point Likert scale was applied to point out the best answer from the five choices of each question [41]. Point one referred to strongly disagree and five referred to strongly agree. On obtaining the level of patient expectations and perceptions, this study classified the mean value of the five-point Likert scale into three levels of ordinal scale such as low, medium, and high. Descriptive statistical analysis was applied for measuring mean value, frequency, and standard deviation. Exploratory factor analysis (EFA) (principal component analysis) was applied for the correlation matrix and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. Eta statistic from ANOVA was applied to examine the relationship between patient-related factors and patients' expectations and perceptions.

RESULTS

All the constructs of the questionnaire indicated significant correlation values and both patients' expectations and the perceptions questions indicated significant KMO values of sampling adequacy such as 0.87 and 0.70 respectively. Table **1** shows the Correlation Matrix and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy scores of the questionnaire in this study.

Table **2** illustrated the socio-demographic information and found that majority (37.7%) of the respondents were in the age range of 46-60 years and

Table 1: Correlation Matrix and Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy

Dimensions		Correlation Matrix							KMO test result
		Tangible	Reliability	Assurance	Empathy	Responsiveness	Cost	Availability	
Expectations	Tangible		.000	.000	.000	.000	.000	.000	0.869**
	Reliability			.000	.000	.000	.000	.000	
	Assurance				.000	.000	.000	.000	
	Empathy					.000	.007	.000	
	Responsiveness						.001	.000	
	Cost							.008	
	Availability								
Perceptions	Tangible								0.693**
	Reliability	.000							
	Assurance	.001	.003						
	Empathy	.000	.000	.000					
	Responsiveness	.000	.000	.010	.000				
	Cost	.000	.000	.000	.000	.000			
	Availability	.005	.016	.000	.007	.000	.217		

Note: **Significant at <.000 level (1-tailed).

Table 2:   Socio-Demographic Profile of the Study Respondents

Characteristics		Number	Percentages
Age groups (years)	≤ 30	40	11.7
	31 to 45	91	26.6
	46 to 60	129	37.7
	61 to 75	73	21.3
	76 or above	9	2.6
Gender	Male	223	65.2
	Female	119	34.8
Marital status	Married	314	91.8
	Unmarried	28	8.2
Education level	Secondary	165	48.2
	Higher secondary	53	15.5
	Bachelor	53	15.5
	Masters	39	11.4
	Higher than masters	3	0.9
	Illiterate	29	8.5
Occupation	Government employee	54	15.8
	Private employee	62	18.1
	Businessmen	71	20.8
	Farmer	28	8.2
	Unemployed	8	2.3
	Others	119	34.8
Family status	Lower class	88	25.9
	Lower-middle-class	61	17.8
	Middle-class	47	13.6
	Upper-middle-class	35	10.2
	Upper class	36	10.5
	No income	75	22.0
Daily activity before stroke	Sports activity	37	10.8
	Physical excersize	48	14
	Travelling	109	31.9
	Culinary activity	115	33.6
	Others	33	9.7
Post-stroke disability	Physical	175	51.2
	Speech and language	161	47.1
	Cognitive	6	1.7
Distance from home to hospital	5-15 km	9	17.2
	16-25 km	62	18.1
	26-35 km	19	5.6
	>35 km	202	59.1
Intensity of visits	Once	11	3.2
	2-4 times	97	28.4
	5-7 times	56	16.4
	>7 times	178	52.0

more than half of the respondents (65.2%) in this study were men. Secondary education was the highest education level for almost half of the respondents (48.2%) in this study and interestingly 34.8% of the respondents indicated others as their occupation, whereas, 81.25% of respondents in others occupations indicated housewife as their occupation. As well as, might be due to low education levels the majority of the respondents maintained a low family status (25.8%). Though, the majority of the respondents in other occupations indicated housewife as their occupation that's why they preferred to do a culinary activity (33.6%) before their stroke.

The level of patients' expectations toward post-stroke outpatient rehabilitation services at the CRP hospital was medium (3.99 ± 0.178). The results indicated that all the dimensions demonstrated high levels of patients' expectations except the cost dimension of the rehabilitation services. Among these seven dimensions, the empathy dimension is considered the highest mean score (4.08±0.292) of patient expectations. Followed by, the assurance dimension counted (4.05 ±0.208) and reliability and availability dimensions indicated a similar mean score (4.04) of patient expectations in the rehabilitation services (Table **3**).

The level of patients' perceptions was also medium (3.53 ± 0.291) in the post-stroke outpatient rehabilitation services of CRP hospital. The highest mean of perceptions score (3.88 ± 0.404) counted the empathy dimension and followed by, the assurance dimension indicated (3.82 ± 0.348) mean score and the tangible dimension indicated (3.77 ± 0.381) mean score of patients' perceptions in the rehabilitation services (Table **3**).

Table 3:   **Measurement of Expectations and Perceptions of Post-Stroke Out-Patients' in the Rehabilitation Services**

Measurement dimensions with attributes	Mean perceptions	±SD	Level	Mean expectations	±SD	Level
Tangible	3.77	± 0.381	High	4.03	± 0.206	High
Well equipment	3.74	± 0.678	High	4.02	± 0.388	High
Physical facilities	3.46	± 0.865	Medium	4.02	± 0.345	High
Cleanliness of professionals'	3.95	± 0.483	High	4.05	± 0.260	High
Wide space	3.83	± 0.674	High	4.02	± 0.228	High
Clean waiting areas	3.86	± 0.577	High	4.02	± 0.252	High
Reliability	3.67	± 0.410	High	4.04	± 0.232	High
Error-free medical records	3.49	± 0.759	Medium	4.02	± 0.294	High
Punctual services	3.87	± 0.583	High	4.03	± 0.262	High
Adequate therapy time	3.39	± 0.922	Medium	4.06	± 0.294	High
Pleasant professionals'	3.92	± 0.482	High	4.04	± 0.351	High
Assurance	3.82	± 0.348	High	4.05	± 0.208	High
Professionals' knowledge	3.76	± 0.642	High	4.03	± 0.304	High
Courteous staff	3.69	± 0.784	High	4.05	± 0.338	High
Safe or confident feeling	**4.07**	± 0.411	High	4.08	± 0.326	High
Error-free appointment service	3.76	± 0.653	High	4.03	± 0.273	High
Empathy	**3.88**	± 0.404	High	**4.08**	± 0.292	High
Treated with dignity and respect	4.05	± 0.350	High	4.09	± 0.319	High
Understand patient needs	3.85	± 0.522	High	4.07	± 0.330	High
Privacy of the patient	3.72	± 0.675	High	4.08	± 0.327	High
Responsiveness	3.41	± 0.497	Medium	4.03	± 0.195	High
Appointment system	3.01	± 0.951	Medium	4.00	± 0.291	High
Prompt responsive to any query	3.55	± 0.813	High	4.03	± 0.303	High
Waiting time	3.40	± 0.904	Medium	3.99	± 0.241	High
Prompt OPR services	3.71	± 0.678	High	3.99	± 0.290	High
Explanation about patient problem	3.37	± 0.874	Medium	**4.10**	± 0.340	High
Explanation about service outcome	3.41	± 0.821	Medium	4.08	± 0.407	High
Cost	3.13	± 0.590	Medium	**3.67**	± 0.387	High
Therapy services charge	3.10	± 0.891	Medium	3.88	± 0.418	High
Laboratory test fee	3.14	± 0.752	Medium	3.66	± 0.528	High
Medicine fee	3.16	± 0.577	Medium	**3.48**	± 0.529	Medium
Availability	**2.98**	± 0.861	Medium	4.04	± 0.222	High
Availability of therapist	3.08	± 1.03	Medium	4.06	± 0.314	High
Availability of therapist appointment	**2.88**	± 0.989	Medium	4.03	± 0.309	High
Total	**3.53**	**± 0.291**	**High**	**3.99**	**± 0.178**	**High**

Values are presented as mean, ± -standard deviation, OPR- Out-Patient Rehabilitation, Level scale: 1 to 2.49=Low, 2.5 to 3.49=Medium, and 3.5 to 5=High.

Table 4:   Factors Relating to the Patients' Expectations in the Rehabilitation Services

Characteristics	Rehabilitation services attributes for patients' expectations							
	Tangible	Reliability	Assurance	Empathy	Responsiveness	Cost	Availability	Total
Age groups	4.026±0.206	4.040±0.232	4.049±0.208	4.079±0.292	4.031±0.195	3.668±0.387	4.044±0.222	3.991±0.178
≤ 30	3.970±0.124	4.037±0.133	4.062±0.224	4.083±0.258	4.029±0.099	3.725±0.336	4.050±0.220	3.993±0.118
31 to 45	4.039±0.179	4.068±0.197	4.060±0.176	4.051±0.216	4.051±0.185	3.610±0.405	4.060±0.256	3.992±0.137
46 to 60	4.031±0.282	4.036±0.318	4.035±0.260	4.064±0.320	4.009±0.224	3.710±0.417	4.035±0.219	3.988±0.240
61 to 75	4.035±0.096	4.013±0.117	4.054±0.133	4.150±0.347	4.045±0.202	3.634±0.338	4.034±0.192	3.995±0.130
76 or above	4.000±0.000	4.055±0.110	4.027±0.083	4.000±0.000	4.037±0.111	3.666±0.288	4.055±0.166	3.977±0.084
Eta statistics	0.105	0.084	0.058	0.135	0.094	0.121	0.051	0.020
p-value	0.445	0.668	0.886	0.186	0.565	0.296	0.927	0.998
Gender	4.026±0.206	4.040±0.232	4.049±0.208	4.079±0.292	4.031±0.195	3.668±0.387	4.044±0.222	3.991±0.178
Male	4.021±0.197	4.042±0.230	4.042±0.205	4.074±0.297	4.026±0.188	3.681±0.374	4.045±0.202	3.990±0.172
Female	4.035±0.221	4.037±0.236	4.060±0.213	4.089±0.283	4.041±0.210	3.644±0.410	4.042±0.256	3.993±0.189
Eta statistics	0.032	0.010	0.042	0.024	0.036	0.046	0.006	0.009
p-value	0.560	0.856	0.444	0.654	0.511	0.395	0.905	0.875
Marital status	4.026±0.206	4.040±0.232	4.049±0.208	4.079±0.292	4.031±0.195	3.668±0.387	4.044±0.222	3.991±0.178
Married	4.032±0.209	4.039±0.235	4.046±0.203	4.080±0.287	4.031±0.199	3.674±0.388	4.038±0.215	3.991±0.181
Unmarried	3.957±0.147	4.053±0.196	4.080±0.263	4.071±0.343	4.035±0.145	3.604±0.370	4.107±0.284	3.987±0.146
Eta statistics	0.101	0.016	0.045	0.009	0.007	0.048	0.085	0.007
P-value	0.063	0.765	0.408	0.873	0.903	0.374	0.117	0.892
Education	4.026±0.206	4.040±0.232	4.049±0.208	4.079±0.292	4.031±0.195	3.668±0.387	4.044±0.222	3.991±0.178
Secondary	3.997±0.202	4.007±0.233	4.053±0.225	4.050±0.291	4.018±0.216	3.609±0.357	4.018±0.198	3.965±0.187
Higher secondary	4.105±0.237	4.127±0.275	4.101±0.211	4.150±0.324	4.132±0.222	3.761±0.410	4.150±0.270	4.076±0.203
Bachelor	4.030±0.160	4.047±0.208	4.047±0.177	4.069±0.229	4.019±0.117	3.685±0.399	4.028±0.117	3.989±0.159
Masters	4.056±0.278	4.064±0.234	4.000±0.229	4.111±0.318	4.000±0.179	3.786±0.435	4.051±0.359	4.009±0.154
Higher	4.000±0.000	4.000±0.000	4.000±0.000	4.000±0.000	4.000±0.000	4.000±0.000	4.000±0.000	4.000±0.000
Eta statistics	**0.192**	**0.182**	0.141	0.130	**0.227**	**0.199**	**0.212**	0.222
P-value	**0.028**	**0.045**	0.242	0.335	**0.003**	**0.019**	**0.009**	0.005
Occupation	4.026±0.206	4.040±0.232	4.049±0.208	4.079±0.292	4.031±0.195	3.668±0.387	4.044±0.222	3.991±0.178
Govt. employee	4.060±0.220	4.064±0.238	4.023±0.213	4.123±0.276	3.996±0.128	3.802±0.422	4.056±0.271	4.018±0.160
Private employee	4.019±0.176	4.028±0.143	4.053±0.177	4.064±0.232	4.021±0.106	3.688±0.408	4.040±0.137	3.987±0.133
Businessmen	4.033±0.261	4.031±0.318	4.042±0.235	4.023±0.325	4.051±0.279	3.713±0.339	4.056±0.261	3.993±0.238
Farmer	4.050±0.117	4.107±0.267	4.071±0.178	4.119±0.303	4.071±0.209	3.595±0.228	4.035±0.131	4.007±0.160
Unemployed	3.950±0.396	4.125±0.267	4.093±0.186	4.125±0.353	4.020±0.139	3.761±0.417	3.875±0.353	3.990±0.191
Eta statistics	0.106	0.122	0.071	0.119	0.105	**0.210**	0.122	0.082
P-value	0.579	0.410	0.889	0.438	0.587	**0.010**	0.409	0.816
Family status	4.026±0.206	4.040±0.232	4.049±0.208	4.079±0.292	4.031±0.195	3.668±0.387	4.044±0.222	3.991±0.178
Low class	4.022±0.167	4.045±0.163	4.056±0.140	4.106±0.301	4.041±0.160	3.625±0.342	4.051±0.214	3.992±0.120
Low middle class	4.036±0.353	4.032±0.391	4.050±0.290	4.082±0.397	3.991±0.279	3.606±0.428	4.041±0.246	3.976±0.292
Middle class	4.038±0.164	4.031±0.192	4.037±0.187	4.063±0.204	4.021±0.107	3.751±0.357	4.021±0.102	3.995±0.144
Upper middle class	4.045±0.200	4.035±0.235	4.021±0.229	4.085±0.306	4.000±0.151	3.790±0.412	4.028±0.295	4.001±0.151
Upper class	4.074±0.188	4.055±0.232	4.020±0.218	4.092±0.334	4.132±0.327	3.648±0.364	4.085±0.308	4.016±0.223
Eta statistics	0.129	0.032	0.087	0.072	**0.195**	0.158	0.077	0.063
P-value	0.336	0.997	0.768	0.881	**0.024**	0.134	0.849	0.934
Daily activity	4.026±0.206	4.040±0.232	4.049±0.208	4.079±0.292	4.031±0.195	3.668±0.387	4.044±0.222	3.991±0.178
Sports activity	4.000±0.066	4.006±0.138	4.054±0.229	4.027±0.253	4.009±0.078	3.738±0.315	4.081±0.250	3.988±0.116
Physical exercise	4.021±0.112	4.052±0.224	4.010±0.136	4.055±0.221	4.024±0.166	3.638±0.399	4.042±0.141	3.976±0.151
Travelling	4.025±0.249	4.041±0.277	4.027±0.227	4.104±0.362	4.006±0.210	3.651±0.383	4.018±0.224	3.981±0.204
Culinary activity	4.034±0.215	4.030±0.220	4.065±0.198	4.084±0.271	4.042±0.205	3.637±0.414	4.052±0.251	3.993±0.185
Eta statistics	0.052	0.096	0.140	0.082	0.155	0.136	0.091	0.101
P-value	0.925	0.532	0.154	0.682	0.084	0.181	0.591	0.491
Disability after stroke	4.026±0.206	4.040±0.232	4.049±0.208	4.079±0.292	4.031±0.195	3.668±0.387	4.044±0.222	3.991±0.178
Physical	4.060±0.232	4.070±0.246	4.078±0.250	4.118±0.322	4.037±0.206	3.750±0.382	4.057±0.273	4.025±0.194
Speech and language	4.001±0.090	4.023±0.155	4.024±0.106	4.048±0.218	4.038±0.143	3.571±0.367	4.036±0.129	3.963±0.107
Cognitive	4.000±0.000	4.000±0.000	4.000±0.000	4.000±0.000	4.000±0.000	4.000±0.000	4.000±0.000	4.000±0.000
Eta statistics	**0.480**	**0.439**	**0.323**	**0.309**	**0.406**	**0.275**	**0.195**	**0.447**
P-value	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**0.005**	**<0.001**

(Table 4). Continued.

Characteristics	Rehabilitation services attributes for patients' expectations							
	Tangible	Reliability	Assurance	Empathy	Responsiveness	Cost	Availability	Total
Hospital distance	4.026±0.206	4.040±0.232	4.049±0.208	4.079±0.292	4.031±0.195	3.668±0.387	4.044±0.222	3.991±0.178
5-15 km	4.051±0.362	4.067±0.387	4.063±0.273	4.045±0.352	4.037±0.257	3.745±0.421	4.069±0.255	4.011±0.292
16-25 km	4.029±0.161	4.048±0.206	4.024±0.148	4.043±0.185	3.986±0.121	3.500±0.385	4.000±0.090	3.947±0.108
26-35 km	4.021±0.091	4.026±0.184	4.039±0.093	4.105±0.249	3.982±0.122	3.789±0.337	4.026±0.114	3.998±0.099
>35 km	4.018±0.160	4.032±0.178	4.053±0.210	4.099±0.303	4.048±0.197	3.686±0.368	4.052±0.246	3.999±0.156
Eta statistics	0.059	0.060	0.062	0.091	0.133	**0.220**	0.102	0.121
P-value	0.761	0.751	0.730	0.421	0.114	**0.001**	0.317	0.179
Intensity of visit	4.026±0.206	4.040±0.232	4.049±0.208	4.079±0.292	4.031±0.195	3.668±0.387	4.044±0.222	3.991±0.178
1 time	4.000±0.000	4.000±0.000	4.000±0.000	4.000±0.000	4.000±0.000	3.909±0.155	4.000±0.000	3.987±0.022
2-4 times	4.014±0.108	4.012±0.170	4.012±0.104	4.024±0.187	4.013±0.137	3.670±0.326	3.989±0.161	3.962±0.108
5-7 times	3.985±0.099	4.017±0.064	4.075±0.171	4.142±0.316	4.017±0.108	3.769±0.326	4.017±0.093	4.004±0.079
more than 7 times	4.047±0.267	4.066±0.292	4.063±0.259	4.095±0.332	4.047±0.244	3.621±0.433	4.084±0.274	4.003±0.228
Eta statistics	0.116	0.113	0.125	0.148	0.086	**0.177**	**0.195**	0.106
P-value	0.209	0.224	0.149	0.058	0.476	**0.014**	**0.004**	0.291

Notes: ± standard deviation, **Bold** one shows significant value (p < 0.05), analysis of variance test results.

Table 5: Factors Relating to the Patients' Perceptions in the Rehabilitation Services

Characteristics	Rehabilitation services attributes for patients' perceptions							
	Tangible	Reliability	Assurance	Empathy	Responsiveness	Cost	Availability	Total
Age groups	3.770±0.381	3.670±0.410	3.826±0.348	3.879±0.404	3.414±0.496	3.134±0.590	2.988±0.862	3.533±0.292
≤ 30	3.670±0.411	3.581±0.350	3.931±0.253	3.816±0.433	3.462±0.332	3.025±0.541	3.237±0.808	3.531±0.207
31 to 45	3.822±0.378	3.686±0.409	3.815±0.361	3.897±0.429	3.494±0.445	3.056±0.588	3.011±0.846	3.540±0.321
46 to 60	3.823±0.389	3.715±0.440	3.833±0.358	3.914±0.421	3.381±0.508	3.286±0.641	2.930±0.932	3.551±0.304
61 to 75	3.699±0.346	3.623±0.395	3.794±0.344	3.858±0.318	3.390±0.590	3.036±0.501	2.959±0.806	3.482±0.270
76 or above	3.533±0.141	3.639±0.309	3.611±0.397	3.629±0.309	3.074±0.464	3.037±0.309	2.722±0.441	3.324±0.151
Eta statistics	**0.195**	0.116	0.151	0.130	0.151	**0.202**	0.120	0.023
p-value	**0.011**	0.335	0.098	0.217	0.101	**0.007**	0.295	0.099
Gender	3.770±0.381	3.670±0.410	3.826±0.348	3.879±0.404	3.414±0.496	3.134±0.590	2.993±0.862	3.536±0.291
Male	3.723±0.387	3.654±0.407	3.859±0.324	3.888±0.377	3.434±0.460	3.094±0.555	2.993±0.897	3.520±0.288
Female	3.861±0.356	3.699±0.416	3.763±0.382	3.862±0.451	3.379±0.557	3.210±0.647	2.979±0.795	3.526±0.298
Eta statistics	**0.172**	0.052	**0.133**	0.030	0.052	0.094	0.008	0.025
p-value	**0.001**	0.337	**0.014**	0.584	0.339	0.084	0.884	0.642
Marital status	3.77±0.381	3.670±0.410	3.82±0.348	3.879±0.404	3.414±0.496	3.135±0.590	2.988±0.862	3.526±0.291
Married	3.794±0.358	3.680±0.411	3.828±0.355	3.881±0.412	3.410±0.504	3.121±0.595	2.987±0.856	3.529±0.291
Unmarried	3.507±0.520	3.553±0.392	3.794±0.255	3.857±0.292	3.464±0.404	3.286±0.510	3.000±0.942	3.494±0.289
Eta statistics	**0.207**	0.085	0.027	0.016	0.030	0.077	0.004	0.032
P-value	**<0.001**	0.117	0.620	0.764	0.582	0.158	0.940	0.550
Education	3.770±0.381	3.670±0.410	3.826±0.348	3.879±0.404	3.414±0.496	3.134±0.590	2.988±0.862	3.526±0.291
Secondary	3.721±0.356	3.659±0.375	3.834±0.305	3.802±0.352	3.345±0.508	3.018±0.473	2.984±0.892	3.480±0.274
Higher secondary	3.942±0.239	3.735±0.368	3.806±0.369	3.924±0.367	3.468±0.422	3.383±0.618	2.952±0.792	3.599±0.243
Bachelor	3.739±0.345	3.655±0.370	3.924±0.292	3.993±0.394	3.434±0.411	3.119±0.527	3.150±0.788	3.574±0.241
Masters	3.830±0.646	3.724±0.609	3.679±0.512	4.025±0.608	3.632±0.457	3.400±0.872	2.743±0.951	3.576±0.445
Higher	3.600±0.000	4.00±0.000	4.00±0.000	4.00±0.000	3.833±0.000	3.966±0.000	3.833±0.288	3.847±0.041
Eta statistics	**0.198**	0.147	**0.189**	**0.224**	**0.204**	**0.292**	0.154	**0.210**
P-value	**0.020**	0.198	**0.031**	**0.004**	**0.013**	**<0.001**	0.154	**0.010**
Occupation	3.770±0.381	3.670±0.410	3.826±0.348	3.879±0.404	3.141±0.496	3.134±0.590	2.988±0.862	3.526±0.291
Govt. employee	3.800±0.536	3.824±0.408	3.847±0.344	4.030±0.454	3.595±0.550	3.463±0.642	3.138±0.978	3.671±0.380
Private employee	3.667±0.425	3.576±0.449	3.830±0.499	3.881±0.422	3.438±0.464	3.064±0.511	2.879±0.930	3.476±0.314
Businessmen	3.788±0.280	3.690±0.410	3.852±0.285	3.887±0.351	3.439±0.448	3.041±0.659	3.017±0.219	3.530±0.253
Farmer	3.728±0.238	3.705±0.408	3.857±0.230	3.809±0.399	3.369±0.476	3.000±0.374	3.035±0.891	3.500±0.295
Unemployed	3.525±0.806	3.781±0.339	4.00±0.298	3.958±0.517	3.291±0.364	3.083±0.154	3.187±1.030	3.546±0.216
Eta statistics	**0.182**	**0.198**	0.121	**0.186**	**0.188**	**0.248**	0.605	**0.226**
P-value	**0.046**	**0.019**	0.423	**0.037**	**0.032**	**0.001**	0.103	**0.003**

(Table 5). Continued.

Characteristics	Rehabilitation services attributes for patients' perceptions							
	Tangible	Reliability	Assurance	Empathy	Responsiveness	Cost	Availability	Total
Family status	3.770±0.381	3.670±0.410	3.826±0.348	3.879±0.404	3.414±0.496	3.134±0.590	2.988±0.862	3.526±0.291
Low class	3.781±0.256	3.608±0.361	3.855±0.321	3.863±0.373	3.348±0.465	3.018±0.552	2.977±0.877	3.493±0.249
Low-middle-class	3.842±0.383	3.725±0.490	3.848±0.313	3.978±0.369	3.456±0.422	3.071±0.534	2.983±0.795	3.557±0.242
Middle class	3.651±0.383	3.643±0.441	3.771±0.512	3.801±0.443	3.305±0.683	3.028±0.509	2.893±1.083	3.442±0.390
Upper-middle-class	3.748±0.642	3.828±0.472	3.764±0.314	3.990±0.508	3.595±0.498	3.447±0.709	3.071±0.924	3.635±0.399
Upper class	3.844±0.354	3.638±0.411	3.729±0.360	3.925±0.399	3.500±0.474	3.379±0.704	2.888±0.784	3.558±0.286
Eta statistics	0.158	0.161	0.153	**0.189**	0.171	**0.252**	0.079	**0.180**
P-value	0.127	0.116	0.159	**0.031**	0.073	**<0.000**	0.835	**0.048**
Daily activity	3.770±0.381	3.670±0.410	3.770±0.381	3.670±0.410	3.770±0.381	3.670±0.410	3.770±0.381	3.670±0.410
Sports activity	3.681±0.363	3.520±0.360	3.681±0.363	3.520±0.360	3.681±0.363	3.520±0.360	3.681±0.363	3.520±0.360
Physical exercise	3.570±0.378	3.661±0.414	3.570±0.378	3.661±0.414	3.570±0.378	3.661±0.414	3.570±0.378	3.661±0.414
Travelling	3.798±0.384	3.676±0.436	3.798±0.384	3.676±0.436	3.798±0.384	3.676±0.436	3.798±0.384	3.676±0.436
Culinary activity	3.855±0.361	3.691±0.403	3.855±0.361	3.691±0.403	3.855±0.361	3.691±0.403	3.855±0.361	3.691±0.403
Eta statistics	**0.251**	0.141	**0.232**	0.155	**0.224**	0.188	0.142	**0.169**
P-value	**<0.001**	0.148	**0.001**	0.083	**0.002**	**0.016**	0.142	**0.044**
Disability after stroke	3.770±0.381	3.670±0.410	3.826±0.348	3.879±0.404	3.414±0.496	3.134±0.590	2.988±0.862	3.526±0.291
Physical	3.864±0.377	3.675±0.442	3.848±0.372	3.931±0.415	3.481±0.468	3.205±0.690	3.032±0.816	3.577±0.303
Speech and language	3.646±0.353	3.653±0.361	3.805±0.315	3.811±0.382	3.334±0.524	3.050±0.430	2.937±0.917	3.462±0.268
Cognitive	4.000±0.000	3.666±0.381	3.833±0.144	3.777±0.192	3.555±0.254	2.666±0.000	3.500±0.000	3.571±0.020
Eta statistics	**0.302**	**0.158**	0.141	**0.172**	**0.153**	**0.165**	0.117	**0.195**
P-value	**<0.001**	**0.037**	0.080	**0.017**	**0.045**	**0.025**	0.195	**0.004**
Hospital distance	3.770±0.381	3.670±0.410	3.826±0.348	3.879±0.404	3.414±0.496	3.134±0.590	2.988±0.862	3.526±0.291
5-15 km	3.844±0.356	3.686±0.481	3.779±0.500	3.904±0.483	3.395±0.467	3.242±0.593	3.144±0.771	3.570±0.322
16-25 km	3.609±0.427	3.665±0.431	3.717±0.340	3.790±0.452	3.268±0.553	3.150±0.458	2.669±0.900	3.410±0.305
26-35 km	3.673±0.251	3.776±0.362	3.855±0.451	3.929±0.305	3.307±0.747	3.035±0.482	3.157±0.866	3.533±0.322
>35 km	3.807±0.370	3.657±0.386	3.870±0.272	3.894±0.368	3.475±0.447	3.107±0.632	3.024±0.856	3.548±0.267
Eta statistics	**0.219**	0.068	**0.175**	0.106	**0.166**	0.094	**0.184**	**0.190**
P-value	**0.001**	0.667	**0.015**	0.284	**0.024**	0.392	**0.009**	**0.006**
Intensity of visit	3.770±0.381	3.670±0.410	3.826±0.348	3.879±0.404	3.414±0.496	3.134±0.590	2.988±0.862	3.523±0.291
1 time	3.836±0.174	3.681±0.355	4.068±0.252	3.848±0.273	3.530±0.363	2.848±0.672	3.500±0.500	3.616±0.237
2-4 times	3.764±0.304	3.652±0.354	3.909±0.265	3.869±0.389	3.474±0.457	2.975±0.512	3.216±0.800	3.551±0.238
5-7 times	3.725±0.306	3.571±0.371	3.839±0.345	3.898±0.297	3.386±0.537	3.154±0.542	2.991±0.817	3.509±0.255
more than 7 times	3.784±0.445	3.710±0.449	3.761±0.378	3.880±0.447	3.383±0.509	3.232±0.619	2.831±0.890	3.512±0.328
Eta statistics	0.064	0.123	**0.224**	0.027	0.091	**0.206**	**0.220**	0.084
P-value	0.713	0.160	**0.001**	0.969	0.416	**0.002**	**0.001**	0.494

Notes: ± standard deviation, **Bold** one indicates significant value (p < 0.05), analysis of variance test results.

The present study considered ten patient-related factors included: age, gender, marital status, education, occupation, family status based on income level, preferred daily activity before the stroke, post-stroke disability, distance from home to the hospital, and intensity of hospital visits to examine the relationship between factors and the level of patients' expectations and perceptions of rehabilitation services. A patient's education may be influenced the patient to expect something logically from the hospital and this study indicated a significant association (0.222, *p*=0.005) between patients' education and level of expectations of rehabilitation services. Relatively, after a stroke patients may be experienced some disabilities and due to that, they expect more from the rehabilitation professionals to retain back their independent life. For

instance, this study revealed a significant association (0.447, *p*<0.001) between disability after stroke factor and the level of patients' expectations in the rehabilitation services (Table **4**).

Separately, six factors indicated a significant association with the patients' perceptions of the rehabilitation services (Table **5**). Education is the factor that may be helped the person to get a better job to carry out a standard family status. Significantly, the education, occupation, and family status may be helped the patient to understand the hospital services very well to perceive a better experience in the hospital services. This study indicated that the education factor confirmed the significant association (0.210, *p*=0.010) with the patient perceptions of rehabilitation services.

Followed by, the occupation calculated the significant association (0.226, *p*=0.003), and the family status was found a significant association (0.180, *p*=0.048) with the patients' perceptions of rehabilitation services. Furthermore, daily activity before the stroke (0.169, *p*=0.044), disability after the stroke (0.195, *p*=0.004), and distance from home to hospital (0.190, *p*=0.006) factors were also indicated significant association with the patient's perceptions in the rehabilitation services (Table **5**).

DISCUSSION

This study addressed the opinions of post-stroke outpatients' on the rehabilitation services of seven attributes after recording what they experienced during a visit to the stroke rehabilitation department at CRP hospital, Bangladesh. This study also defined the relationship between patient-related factors (demographic profile of patients) and the perceptions and expectations of post-stroke outpatients in rehabilitation services. The proposed questionnaire to measure expectations and perceptions of the post-stroke outpatients' in the rehabilitation services showed a significant correlation and KMO scores on two separate scales, namely, patients' expectations and perceptions of rehabilitation services. Generally, the SERVQUAL model is a widely used service quality measurement model and it showed significant validity and reliability coefficient scores [30]. The present study extended the SERVQUAL model by adding extra two dimensions and these two dimensions also showed a significant validity and reliability coefficient score in line with the study of Andaleeb *et al.* [24].

The findings of the present study clearly stated that, after a stroke, patients were affected physically, functionally, communicably, and cognitively. For cognitive impairment or due to their poor understanding several studies applied PROMs and PREMs to assess the health status and quality of healthcare services [25, 26]. Though the number of cognitive impairment respondents was limited among the participants, thus, the current study allowed the regular career of the patients' to answer the questionnaire instead of the patients. The majority of the respondents' ages range from 46-60 years. At this age range, people are spending their maximum time doing their job for earning money and Mamin *et al.* [12] reported that nearly 77% of stroke survivors were public or private, or self-employed in Bangladesh. Thus, it greatly impacts the economy of this country. A. Torabipour *et al.* [30] conducted a study in the physical therapy and

rehabilitation centre in Iran and their study revealed that 21-30 years age group of people visited the rehabilitation services for maximum times, which is opposing to the present study participants group. Contrary to the study of A. Torabipour *et al.* [30], the present study revealed that men in comparison with women are affected mostly by stroke and also participated in after stroke rehabilitation services to retain back to their independent and healthy life.

Generally, patients come to the hospital with high hopes of meeting their desired services and health outcomes. They expected high quality of rehabilitation care and consequently consulted with the rehabilitation professionals to fulfil their expectations. Patients with a master's degree were compared with other groups, including those with other levels of education groups had high patient perception scores in the tangible, assurance, empathy, responsiveness, and cost dimensions of rehabilitation services. The result of this study exposed a significant association between the level of education and patients' perceptions of the rehabilitation services. The study of Al Fraihi and Latif [20] also confirmed a significant association in the tangible and reliability dimensions of outpatient services. Tekindal *et al.* [34] confirmed dissimilar findings and revealed that lower education levels considered higher perceptions in the rehabilitation services. Separately, the higher secondary educated patients were expected high quality services in rehabilitation care. They expected good-looking physical environments with reliable services. They preferred available and responsive professionals to provide prompt services with a realistic service charge. Zhou and Chen [42] claimed that patients' expectations of hospital services are greatly influenced by the patients' education level. In this regard, this study indicated that the education level revealed a significant relationship with the level of patients' expectations in the rehabilitation services.

Government employees obtained better therapy services experience compared to other patient groups. The government employee experienced better physical environments with reliable rehabilitation professionals and their therapy services. The government employee also perceived higher levels of respect and responsive services from rehabilitation professionals with realistic therapy service charges, though; their preference was also the low-cost therapy services in the centre. This study indicated a significant association between the patients' occupation and the level of perception and the discrete dimension of expectations of rehabilitation

services. The result was dissimilar to the study of Girmay *et al*. [43], where they found an insignificant association between occupation and patient perceptions.

The family status of the patients confirmed a significant association with the level of patients' perceptions of the rehabilitation services. The worthy people from upper-middle-class families were perceived to have the highest level of empathy from the rehabilitation professionals compared with other social classes. The upper-middle-class patients also experienced a practical therapy service charge because they have enough money compared with other classes of the family. They did not care about money; they want quality services for returning to their independent and functional life. The findings were similar to the study of Tekindal *et al*. [34]. At this point, the upper-class family expected better hospital responsiveness in terms of responsive rehabilitation professionals and their services. The finding is not similar to the study of A. Torabipour *et al*. [30].

The present study considered some pre-stroke daily activities including; sports activity, physical exercise, travelling, and culinary activity. These pre-stroke functions helped to recover early from after-stroke disability with better perceptions [44]. The physically disabled patients considered better perceptions of the reliability, empathy, and therapy charges of the rehabilitation services. Similarly, the cognitively disabled patients confirmed a better perception of the tangibility and responsiveness of rehabilitation services. That's why the disability after the stroke factor revealed a significant association with the level of patients' perceptions of the rehabilitation services. Hence, Mavaddat *et al*. [35] reported that the disability after the stroke negatively affected patients' perceptions. Besides, after a stroke, the physically disabled patients expected a good physical environment with reliable professionals and their services. They expected to feel safe and be treated with respect and provide rehabilitation services at a reasonable service charge. Particularly, the level of expectations is influenced by the type of patients' illness and expertise in pre-stroke functions [33]. In this regard, the present study indicated that the majority of the respondents preferred to do a culinary activity before their stroke, which means the types of disability about the pre-stroke functions concluded a significant relationship with the level of patients' expectations in the rehabilitation services.

The distance from home to hospital factor found that the patients whose were attended the services from a close distance (i.e. 5-15 kilometers) indicated and confirmed that, the rehabilitation hospital provided services with a better outlook and neat and clean professionals. Besides, the patients from 26-35 kilometers distance experienced available professionals to get the appointments, but, the therapy service charge did not match their level of expectation in the rehabilitation services. Moreover, the patients from another district i.e. more than 35 kilometers of distance perceived a higher assurance of the services with the responsive professionals. Sofaer and Firminger [32, 33] reported that better patients' perception of the healthcare services depends on convenient places and times to visit the hospital for services. Since the distance from home to hospital visit factor revealed a significant association with the level of patients' perceptions and the discrete dimension of expectations in the rehabilitation services.

Contrary to the study of Al Fraihi and Latif [20], the findings of the present study confirmed that the age, gender, marital status, and intensity of hospital visit factors confirmed a significant relationship with discrete dimensions of patients' perceptions in the rehabilitation services.

The present study selected and examined the factors relating to a specific condition-based out-patient rehabilitation services which is limiting the information regarding factors relating to in-patient and other condition-based rehabilitation services. Only the patients were considered as respondents of this study since it is limiting the factors relating to the providers' perspective on the rehabilitation services.

CONCLUSION

Patient expectations were relatively high in the rehabilitation services of this study. Due to the shortage of available therapists and inadequately funded services the patients did not get regular appointments with the therapist. Relatively, several factors included; education, occupation, family status, daily activity, disability after stroke, and hospital distance were showed a significant relationship with unconvinced perceptions of the patients. Therefore, to achieve the SDGs the rehabilitation manager and the therapists are needed to consider these factors for enhancing patients' participation in the therapeutic services.

DECLARATIONS

Conflict of Interest

There is no conflict of interest.

REFERENCES

[1]   Webster TR, Mantopoulos J, Jackson E, Cole-Lewis H, Kidane L, Kebede S, *et al*. A brief questionnaire for assessing patient healthcare experiences in low-income settings. International Journal for Quality in Health Care 2011; 23(3): 258-68.
https://doi.org/10.1093/intqhc/mzr019

[2]   Abuosi AA, Atinga RA. Service quality in healthcare institutions: establishing the gaps for policy action. International journal of health care quality assurance 2013; 26(5): 481-92.
https://doi.org/10.1108/IJHCQA-12-2011-0077

[3]   Hussain MM, Raihan MMH. Patients' satisfaction with public health care services in bangladesh: some critical issues. Malaysian Journal of Medical and Biological Research 2015; 2(2): 115-26.

[4]   Muhammad F, Chowdhury M, Arifuzzaman M, Chowdhury AA. Public Health Problems in Bangladesh: Issues and challenges. South East Asia Journal of Public Health 2017; 6(2): 11-6.
https://doi.org/10.3329/seajph.v6i2.31830

[5]   Ahmed SM, Alam BB, Anwar I, Begum T, Huque R, Khan JA, . . ., *et al*. Bangladesh Health System Review. Asia Pacific Observatory on Health Systems and Policies. Health Systems in Transition 2015; 5(3).

[6]   Bangladesh [Internet]. Institute for Health Metrics and Evaluation 2016 [cited 15th March, 2017]. Available from: http: //www.healthdata.org/bangladesh.

[7]   Mohammad Q. Management of stroke-Bangladesh perspective. Bangladesh Medical Journal 2014; 42(1): 34-7.
https://doi.org/10.3329/bmj.v42i1.18979

[8]   Alarcos Cieza AK, Qhayiya Magaqa, Abdul Ghaffar. Health policy and systems research for rehabilitation: a call for papers,. Bull World Health Organ 2021; 99(10): 686.
https://doi.org/10.2471/BLT.21.287200

[9]   Post-Stroke Rehabilitation [Internet]. National Institutes of Health 2014 [cited 23rd March, 2017]. Available from: https: //stroke.nih.gov/materials/rehabilitation.htm.

[10]   Ministry of Health and Family Welfare. Health Bulletin 2016. Management Information System Directorate General of Health Services. Bangladesh: Dhaka, Mohakhali.; 2016.

[11]   Biswas T, Pervin S, Tanim MIA, Niessen L, Islam A. Bangladesh policy on prevention and control of non-communicable diseases: a policy analysis. BMC public health 2017; 17(1): 582.
https://doi.org/10.1186/s12889-017-4494-2

[12]   Mamin FA, Islam MS, Rumana FS, Faruqui F. Profile of stroke patients treated at a rehabilitation centre in Bangladesh. BMC research notes 2017; 10(1): 520.
https://doi.org/10.1186/s13104-017-2844-x

[13]   Ahmed N, Quadir MM, Rahman MA, Alamgir H. Community integration and life satisfaction among individuals with spinal cord injury living in the community after receiving institutional care in Bangladesh. Disability and rehabilitation 2018; 40(9): 1033-40.
https://doi.org/10.1080/09638288.2017.1283713

[14]   Uddin T, Islam MT, Rathore FA, O'Connell C. Disability and rehabilitation medicine in Bangladesh: Current scenario and future perspectives. The Journal of the International Society of Physical and Rehabilitation Medicine 2019; 2(4): 168.
https://doi.org/10.4103/jisprm.jisprm_61_19

[15]   Ali I, Azman A, Singh PSJ, Hatta ZA, Mungai NW, Islam MS, *et al*. People with Disabilities: The Role of Social Workers for Rehabilitation in Bangladesh. Building Sustainable Communities: Springer; 2020. p. 403-24.
https://doi.org/10.1007/978-981-15-2393-9_20

[16]   Mohiuddin AK. An extensive review of patient health-care service satisfaction in Bangladesh. Adesh University Journal of Medical Sciences & Research 2020; 2(1): 5-16.
https://doi.org/10.25259/AUJMSR_6_2020

[17]   Parasuraman A, Zeithaml VA, Berry LL. A conceptual model of service quality and its implications for future research. the Journal of Marketing. 1985: 41-50.
https://doi.org/10.1177/002224298504900403

[18]   Parasuraman A, Zeithaml VA, Berry LL. SERVQUAL: A multiple-item scale for measuring customer perceptions of service quality. Journal of Retailing. 1988; 64(1): 12-40.

[19]   Alghamdi FS. The impact of service quality perception on patient satisfaction in Government Hospitals in Southern Saudi Arabia. Saudi medical journal 2014; 35(10): 1271-3.

[20]   Al Fraihi KJ, Latif SA. Evaluation of outpatient service quality in Eastern Saudi Arabia. Patient's expectations and perceptions. Saudi medical journal 2016; 37(4): 420-8.
https://doi.org/10.15537/smj.2016.4.14835

[21]   Nadi A, Shojaee J, Abedi G, Siamian H, Abedini E, Rostami F. Patients' expectations and perceptions of service quality in the selected hospitals. Medical Archives 2016; 70(2): 135.
https://doi.org/10.5455/medarh.2016.70.135-139

[22]   Carman JM. Consumer perceptions of service quality: an assessment of T. Journal of retailing. 1990; 66(1): 33.

[23]   Choi K-S, Lee H, Kim C, Lee S. The service quality dimensions and patient satisfaction relationships in South Korea: comparisons across gender, age and types of service. Journal of Services Marketing 2005; 19(3): 140-9.
https://doi.org/10.1108/08876040510596812

[24]   Andaleeb SS, Siddiqui N, Khandakar S. Patient satisfaction with health services in Bangladesh. Health policy and planning 2007; 22(4): 263-73.
https://doi.org/10.1093/heapol/czm017

[25]   Patchick EL, Horne M, Woodward-Nutt K, Vail A, Bowen A. Development of a patient-centred, patient-reported outcome measure (PROM) for post-stroke cognitive rehabilitation: qualitative interviews with stroke survivors to inform design and content. Health Expectations 2015; 18(6): 3213-24.
https://doi.org/10.1111/hex.12311

[26]   Togher F, Siriwardena AN, Windle K. Development of a Patient Reported Experience Measure (PREM) for use in the ambulance service. BMJ Publishing Group Ltd and the British Association for Accident …; 2015.
https://doi.org/10.1136/emermed-2015-204980.4

[27]   Lee D. HEALTHQUAL: a multi-item scale for assessing healthcare service quality. Service Business 2017; 11(3): 491-516.
https://doi.org/10.1007/s11628-016-0317-2

[28]   Bobocea L, Gheorghe I, Spiridon S, Gheorghe C, Purcarea V. The management of health care service quality. A physician perspective. Journal of medicine and life 2016; 9(2): 149.

[29]   Naidu A. Factors affecting patient satisfaction and healthcare quality. International journal of health care quality assurance 2009; 22(4): 366-81.
https://doi.org/10.1108/09526860910964834

[30]   Torabipour A, Sayaf R, Salehi R, Ghasemzadeh R. Analyzing the Quality Gapsin the Services of Rehabilitation Centers Using the SERVQUAL Technique in Ahvaz, Iran. Jundishapur Journal of Health Sciences 2016; 8(1).
https://doi.org/10.17795/jjhs-32560

[31]   Farr M, Cressey P. Understanding staff perspectives of quality in practice in healthcare. BMC health services research 2015; 15: 123.
https://doi.org/10.1186/s12913-015-0788-1

[32]   Mohuiddin A. Patient Satisfaction with Healthcare Services: A Bangladesh Scenario. J BioMed Res Innov 2020; 1(1): 101.
https://doi.org/10.37547/tajmspr.v2i05.344

[33]   Sofaer S, Firminger K. Patient perceptions of the quality of health services. Annual review of public health 2005; 26.
https://doi.org/10.1146/annurev.publhealth.25.050503.153958

[34]   Tekindal M, Tekindal MA, Yazicr AC. Evaluation of expected and perceived of quality of service with the SERVQUAL scale: The case of a private physical therapy and rehabilitation center. Biomedical Research 2017; 28(2).

[35]   Mavaddat N, Sadler E, Lim L, Williams K, Warburton E, Kinmonth A, *et al*. Perceptions of self-rated health among stroke survivors: a qualitative study in the United Kingdom. BMC geriatrics 2018; 18(1): 81.
https://doi.org/10.1186/s12877-018-0765-8

[36]   Rehabilitation Therapy After Stroke [Internet]. National Stroke Association 2017 [cited 3rd March, 2017]. Available from: www.stroke.org.com.

[37]   Charan J, Biswas T. How to Calculate Sample Size for Different Study Designs in Medical Research? Indian Journal of Psychological Medicine 2013; 35(2): 121-6.
https://doi.org/10.4103/0253-7176.116232

[38]   Kumar R. Research Methodology. 2 ed. London: Sage publications; 2005.

[39]   Donabedian A. Basic approaches to assessment: structure, process and outcome. The definition of quality and approaches to its assessment: explorations in quality assessment and monitoring. 1980; 1: 77-128.

[40]   Lee D, Kim KK. Assessing healthcare service quality: a comparative study of patient treatment types. International Journal of Quality Innovation 2017; 3(1).
https://doi.org/10.1186/s40887-016-0010-5

[41]   Bowling A. Research Methods In Health: Investigating Health And Health Services. 4 ed: open university press; 1997.

[42]   Zhou L, Chen Y. The Research and Management of Patient Expectations of Medical Service Quality 2010.

[43]   Girmay A, Marye T, Haftu M, Brhanu T, Gerensea H. Patients expectation strongly associated with patients perception to nursing care: hospital based cross sectional study. BMC research notes 2018; 11(1): 310.
https://doi.org/10.1186/s13104-018-3447-x

[44]   Trost SG, Owen N, Bauman AE, Sallis JF, Brown W. Correlates of adults' participation in physical activity: review and update. Medicine & science in sports & exercise 2002; 34(12): 1996-2001.
https://doi.org/10.1097/00005768-200212000-00020