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Research Article

Decentralization of OPDs of Basic and Rural Health Care Units of Punjab, Pakistan

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Abstract: Decentralization is associated with political administration and historical development and it varies according to region and implementation factors. In the 1980s, the International Monetary Fund (IMF) and World Bank demonstrated that corruption and bad administration in society are due to centralization policies which concentrated authority and power in the hands of the elite upper class. This criticism was an initial point to start the period of structural decentralization adjustment. Decentralization is a substantial process for equal distribution of healthcare service delivery in the community. The outpatient department (OPD) is one of the most important parts of any health care unit to diagnose and treat patients who do not require overnight care or stay in hospitals. The main purpose of this research was to analyze the effects of decentralization and improvements in health services for OPD by analyzing the number of patients in Primary Health Care Centers (Basic Health Unit (BHU) and Rural Health Centers (RHCs) in Punjab before and after decentralization. Non-probability convenient and simple random sampling technique was employed and patients visiting PHCs (primary healthcare centers) OPD, were included in the study population. OPD patients of rural and basic health care units were categorized into three pairs OPD 1, 2 and 3, and the means and other statistical parameters were calculated by using SPSS. The average mean of all groups of OPD patients of RHCs were 119441.1111, 192536.5185 and 153487.1358, respectively. The average mean of all groups of BHU was 94818.5062, 109331.7160, and 124231.0123, respectively. These results showed that the number of patients in the outdoor patient department increased after decentralization due to more health facilities.

Keywords: Decentralization, Rural Health Centers, Basic Health Unit, OPD.

1. INTRODUCTION

Primary healthcare centers are responsible for the essential health care of the entire community. Primary care refers to population-oriented care, including health promotion and screening. According to Alma Ata Declaration, 85% to 90% of health problems can be resolved at primary health care centers or by enhancing the ability of clinical testing, and it is possible to maintain 96% of patients at primary healthcare facilities [1, 2]. Primary health care guarantees that individuals receive high-quality, comprehensive services, including several promotions, prevention and therapies,

rehabilitative services, and pain management, as close to their homes as possible. Decentralization can be characterized in terms of 'who' gets decision-making authority. According to public administration "who" can differentiate between deconcentration and devolution. In deconcentration local agencies have more power to make decisions, while in devolution, local government with associated responsibility of several other sectors gets a choice to make decisions [3]. Public health has a layer structure system in which Basic Health Unit (BHU) and Rural Health Centers (RHCs) constitute a primary level of health services at the Union Councils level. Tehsil Headquarter

Hospitals provide secondary healthcare at tehsil and District Headquarter Hospitals in every district [4, 5]. The government of Pakistan delivers health facilities throughout Pakistan through primary (PHCs), secondary, and tertiary health care units. PHCs are primary level health facilities such as emergency services, hospitalization amenities, surgical procedures, and specialized clinics. It is composed of a rural health center and basic health units. Basic Health Unit (BHU) is the main service, from where many patients are referred to the RHCs (Rural Health Centers) [6]. These primary health care services are observed and administered by district-level health officers. All services of PHC, including basic and rural health centers, are controlled by qualified physicians with excellent exposure in the therapeutic and medicinal field. RHCs and BHU are intended to enhance access to primary health care services; they can be public or private health facilities [7, 8]. They have required a team approach of doctors and non-physician staff like nurses, assistants, etc. Outpatient departments of rural and basic health care centers are part of the clinical facility designed to treat outpatients who do not require overnight care or bed at that time. Modern-time OPDs have various services, surgical processes, and diagnostic tests [9, 10]. OPD is an important health facility component and integrated with in-patient services and consultant physicians. All the collected data of research was analyzed using SPSS version 26. Mean ± S.D used for quantitative data, paired t-test was also applied where applicable to compare the means in the treatment and control groups and test of normality (Kolmogorov–Smirnov test and the Shapiro–Wilk test) was done to check the normal distribution of data. The main purpose of this research was to analyze the effect of decentralization and improvements in health services for OPD by analyzing the number of patients in BHU and RHCs of Punjab before and after decentralization. Whether this is an effective way to enhance the quality and provision of health services to every citizen of Pakistan or not.

2.   MATERIALS AND METHODS

2.1 Study Design

This study was a cross-sectional survey based, on a random stratified sample of Rural and Basic Health Care facilities. This study was carried out at BHU and RHCs OPD patients of nine highly burdened selected districts of Punjab. A total of 350 healthcare facilities were selected for data collection. Data was collected during a field survey from 2009 to 2010, 2012 to 2014, and 2017 to 2018, after ethical standards were approved by the IRB (Institutional Review Board) of the University of Lahore.

2.2 Sampling Technique

Non-probability convenient and simple random sampling technique was employed and patients visiting PHCs OPD, were included in the study population.

2.3. Data Analysis Procedure

Collected data was analyzed using SPSS version 26. Mean ± S.D. was used for quantitative data and to check the normal distribution of data, test of normality including Kolmogorov-Smirnov and Shapiro-Wilk was also calculated.

3.   RESULTS

OPD patients of rural and basic health care unit were categorized in three pairs OPD 1 (2009 to 2010), 2 (2012-13) and 3 (2017-2018). The average mean of all groups of OPD patients of RHC were 119441.1111, 192536.5185 and 153487.1358, respectively. The average mean of all groups of BHU was 94818.5062, 109331.7160, and 124231.0123, respectively. Statistical factors of all groups such as 95% Confidence Interval for Mean Lower and Upper bound, 5% Trimmed Mean, Median, Variance, Standard Deviation (to measure the amount of variability or dispersion), Range, Interquartile range, Skewness (to measure the asymmetry of the distribution) and Kurtosis (to measure the tailedness of distribution) of RHCs and BHU were also calculated, and are given in Table 1 and 2. To test the normal distribution of data, the test of normality, including Kolmogorov-Smirnov and Shapiro-Wilk was done. In the present data, the significant value of the Shapiro-Wilk test was smaller than 0.05 in all groups, which showed that data significantly deviated from a normal distribution. Kolmogorov-Smirnov p-value was also significantly deviated from the significant level (0.05) in the present research data, as shown in Tables 3 and 4. The same data from the same

Table 1. Descriptive stats of OPD patients in rural health centers.

Statistical factors	2009 to 2010	2012 to 2013	2017 to 2018
Mean	119441.1111	192536.5185	153487.1358
95% Confidence Interval for Mean Lower bound Upper bound	61586.3002 177295.9221	76933.3790 308139.6581	78246.3246 228727.9470
5% Trimmed Mean	86892.5679	106816.0316	107873.1509
Median	20739.0000	26684.0000	37540.0000
Variance	68458935541.050	273331976704.403	115786552332.419
Std. Deviation	261646.58519	522811.60728	340274.23107
Minimum	.00	.00	.00
Maximum	824756.00	2.89E+6	1.13E+6
Range	824756.00	2891558.00	1128026.00
Interquartile Range	58623.00	59227.00	102189.00
Skewness	2.234	3.857	2.478
Kurtosis	3.235	16.617	4.431

Table 2. Descriptive stats of OPD patients in Basic health unit.

Statistical factors	2009 to 2010	2012 to 2013	2017 to 2018
Mean	94818.5062	109331.7160	124231.0123
95% Confidence Interval for Mean Lower bound Upper bound	24061.7966 165575.2157	25933.1926 192730.2395	25600.6753 222861.3494
5% Trimmed Mean	34046.7243	37209.1118	42552.1619
Median	16731.0000	16714.0000	14518.0000
Variance	102396813318.253	142255120524.831	198962953625.937
Std. Deviation	319995.02077	377167.23151	446052.63549
Minimum	0.00	0.00	0.00
Maximum	1.89E+6	2.06E+6	2.75E+6
Range	1888901.00	2056156.00	2747230.00
Interquartile Range	102252.00	110062.50	109622.50
Skewness	4.898	4.860	5.420
Kurtosis	23.314	22.661	29.711

pairs were also analyzed to produce a Normal Q-Q Plot and detrended Normal Q-Q Plot as shown in Figures 1 to 4 (Supplementary Data).

3.1 Paired T-test

For paired T-test, three pairs of all study duration eras were formed; pair 1 included 2009-10 and 2012-13, pair 2; included 2009-10 and 2017-18 and pair 3 included 2017-18 and 2012-13. Paired sample T-test of all the groups was also calculated to compare the mean of the two pairs. The means and standard deviation of all the groups are given in Table 5. Paired sample correlation of all three pairs of BHU were 0.998, 0.925, and 0.947 and RHCs were 0.816, 0.933 and 0.562 ($p < 0.001$) respectively showing a significantly positive correlation among pairs as shown in Table 6. T values of paired T-test

Table 3. Test of normality (Kolmogorov-Smirnov[a]).

Pairs	OPD in RHCs			OPD in BHU		
	Statistic	df	Sig.	Statistic	df	Sig.
2009-10	0.444	81	0.000	0.446	81	0.000
2012-13	0.452	81	0.000	0.445	81	0.000
2017-18	0.424	81	0.000	0.413	81	0.000

a. Lilliefors Significance Correction.

Table 4. Test of normality (Shapiro-Wilk).

Pairs	OPD in RHCs			OPD in BHU		
	Statistic	df	Sig.	Statistic	df	Sig.
2009-10	0.475	81	0.000	0.282	81	0.000
2012-13	0.403	81	0.000	0.275	81	0.000
2017-18	0.461	81	0.000	0.270	81	0.000

Table 5. Paired sample T-test **.**

Pairs	OPD in RHCs			OPD in BHU		
	Mean	Std. deviation	Std. error mean	Mean	Std. deviation	Std. error mean
2009-10	119441.111	261646.58519	29071.84280	94818.5062	319995.0207	35555.00231
2012-13	192536.518	522811.60728	58090.17859	109331.716	377167.2315	41907.47017
2009-10	119441.111	261646.58519	29071.84280	94818.5062	319995.0207	35555.00231
2017-18	153487.135	340274.23107	37808.24790	124231.012	446052.6354	49561.40394
2012-13	192536.518	522811.60728	58090.17859	109331.716	377167.2315	41907.47017
2017-18	153487.135	340274.23107	37808.24790	124231.012	446052.6354	49561.40394

Table 6. Paired samples correlations.

Pairs	Correlation (RHCs)	Correlation (BHU)	Sig.
2009-10 & 2012-13	0.816	0.998	0.000
2009-10 & 2017-18	0.933	0.925	0.000
2012-13 & 2017-18	0.562	0.947	0.000

Table 7. Paired sample T-test of rural health centers.

Pairs	Paired differences					T	df	Sig. (2-tailed)
	Mean	Std. deviation	Std. error mean	95% confidence interval of the difference				
				Lower	Upper			
1	-73095.40	344372.7	38263.63	-149242.47	3051.66	-1.910	80	0.060
2	-34046.02	134426.6	14936.29	-63770.20	-4321.84	-2.279	80	0.025
3	39049.382	435085.5	48342.83	-57155.92	135254.6	0.808	80	0.422

Table 8. Paired sample T-test of basic health unit.

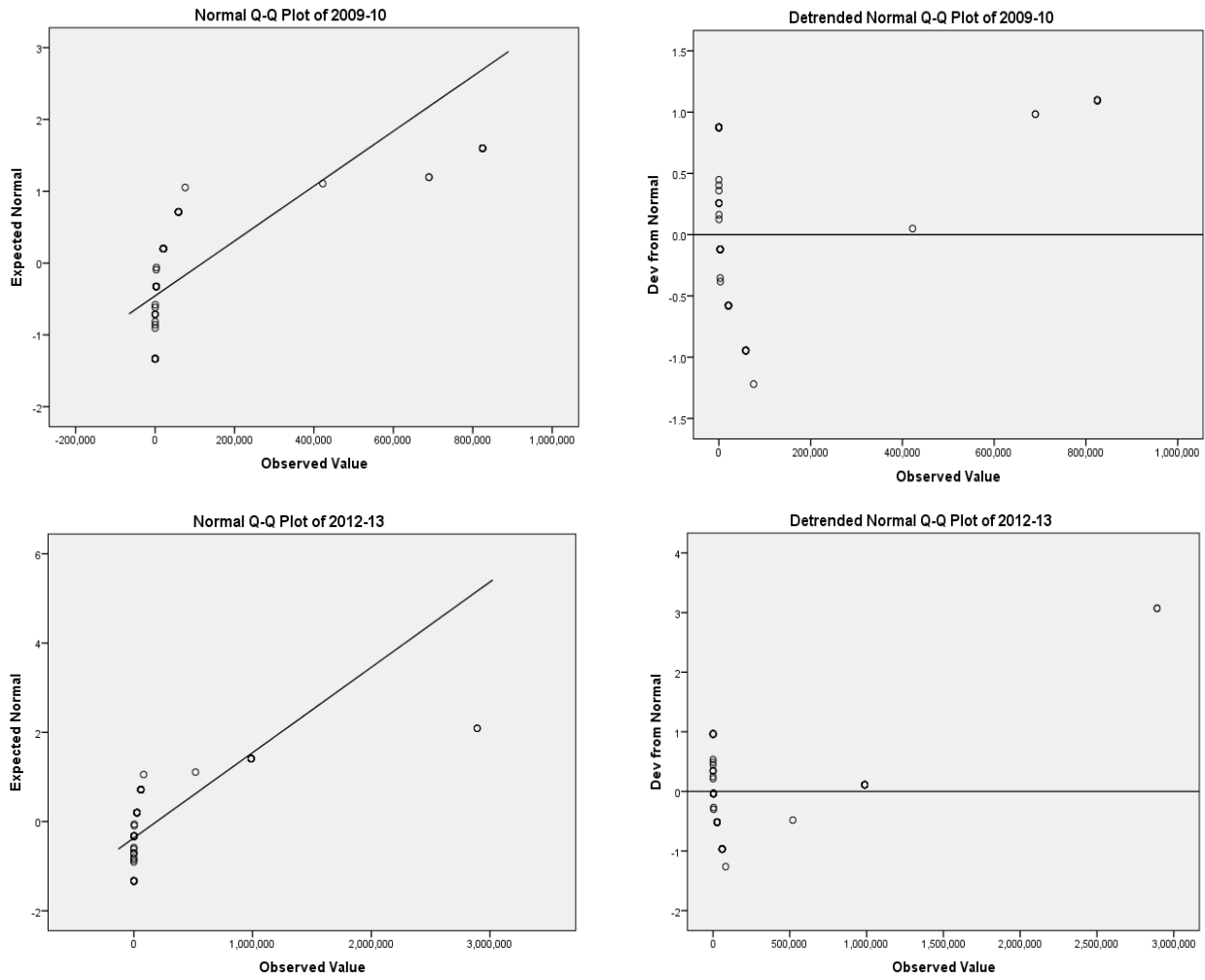| Sr. no.	Mean	Std. deviation	Std. error means	95% confidence interval of the difference		T	df.	Sig. (2- tailed)
				Lower	Upper			
1	-14513.20	61468.09	6829.7	-28104.92	-921.49	-2.125	80	.037
2	-29412.50	21485.85	21485.8	-72170.71	13345.70	-1.369	80	.175
3	-14899.29	150018.4	16668.7	-48071.08	18272.49	-.894	80	.374

Fig. 1. Normal and detrended Q-Q plot showing correlation among OPD patient's data of RHC:2009-10 and 2012-13.
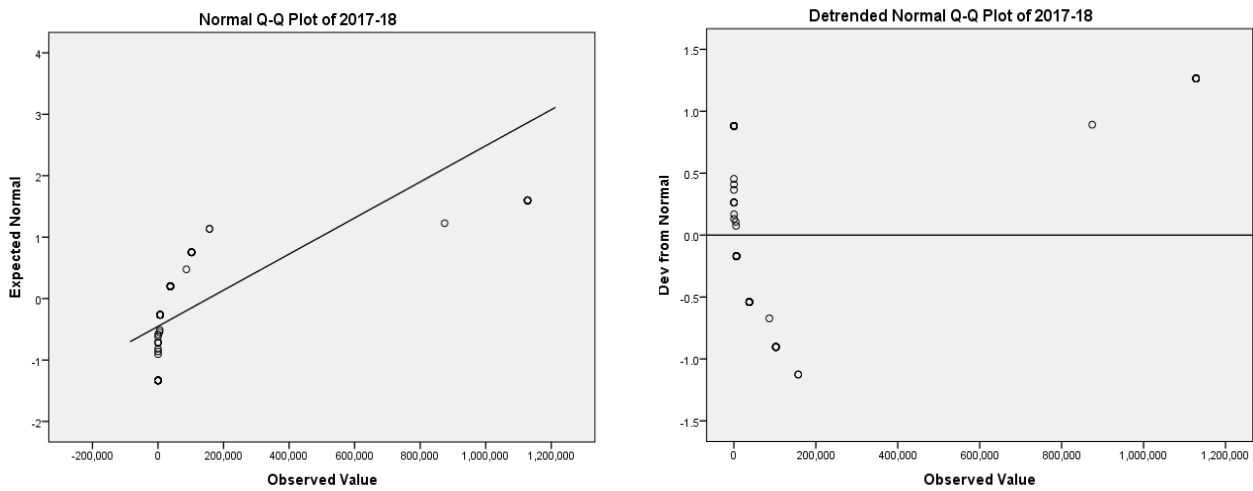

Fig. 2. Normal and detrended Q-Q plot showing correlation among OPD patient's data of RHC: 2017-18.
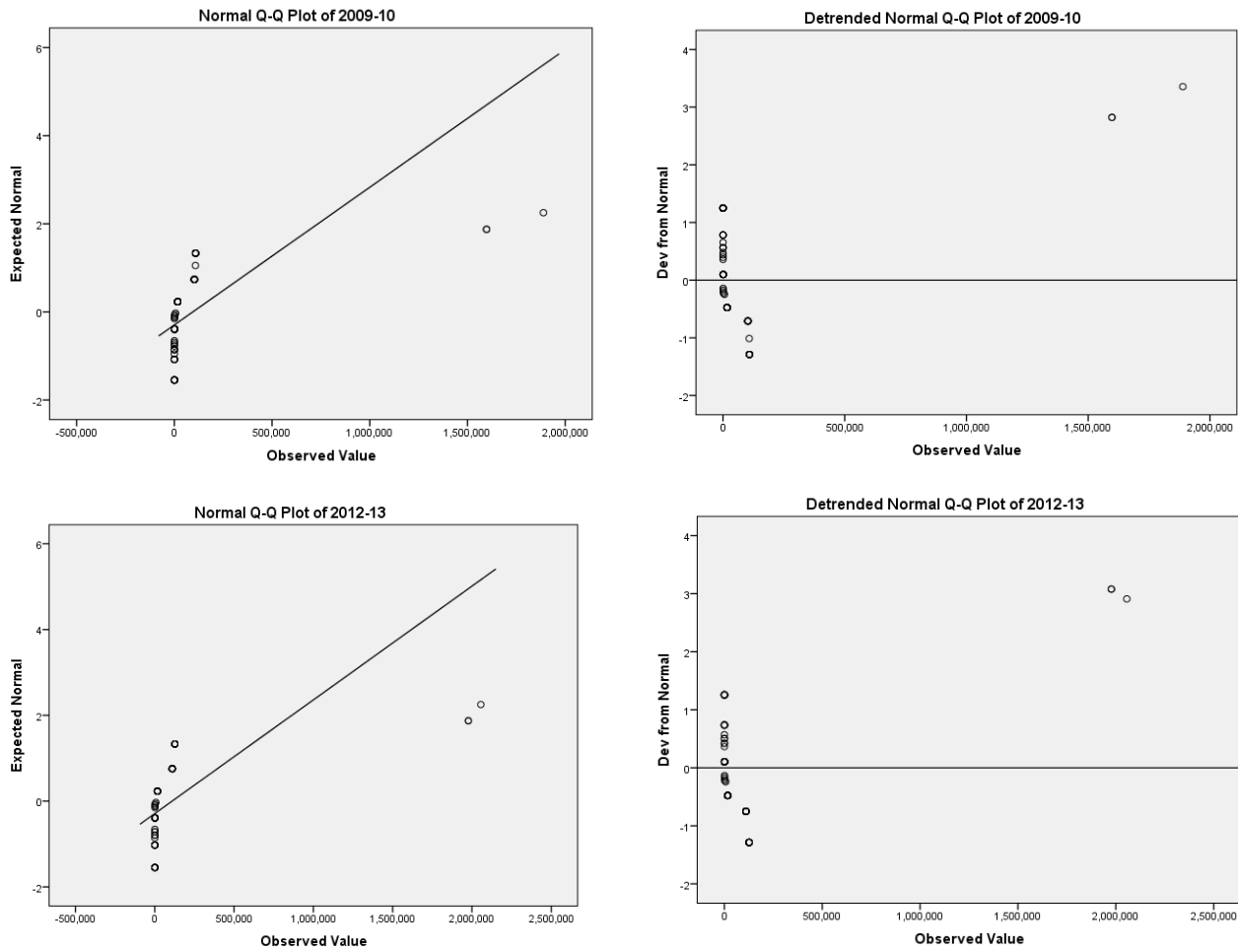
Fig. 3. Normal and detrended Q-Q plot showing correlation among OPD patient's data of BHU: 2009-10 and 2012-13.
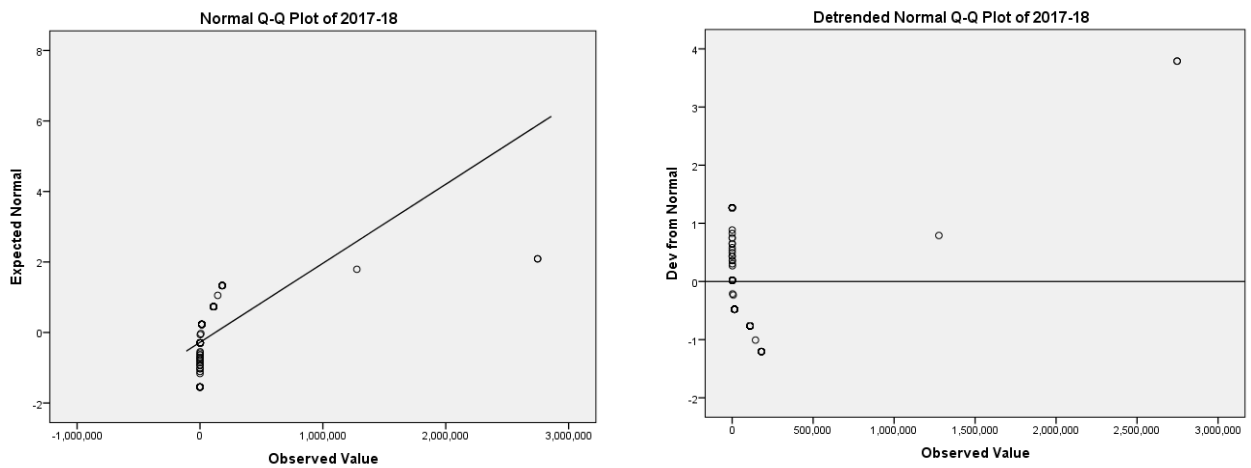

Fig. 4. Normal and detrended Q-Q plot showing correlation among OPD patient's data of BHU; 2017-18.

of all the pairs of RHCs were -1.910, -2.279, 0.808 and Sig. (2 tailed values) was 0.06, 0.02 and 0.42 with degree of freedom 80 and T value of paired T-test of all the pairs of BHU was -2.125, -1.369 and -0.894 respectively, and Sig. values were 0.37, 0.175 and 0.374 with degree of freedom 80 as shown in Tables 7 and 8.

4. DISCUSSION

Decentralization is the process in which authority transfers responsibilities and power from the federal government to the subordinate government. Decentralization has been applied and promoted to enhance public goods betterment, responsiveness,

government accountability, service delivery, popular participation in decision making, stability of state and contribution to better governance [11, 12]. Health quality is a global issue and the main goal of health services is to improve community. Health care service, delivery and its management are significant concerns for Pakistan's government and public strategic administrative approaches. Health is a global communal good so, better management is associated with better delivery of primary and secondary health services to patients. The satisfaction level of patient is one of the important factors of health care units to measure health quality and it is directly associated with the use of health care facilities. Patient's satisfaction can be defined as an attitude derivate by the receiver of health services whether the patient's expectations for services like availability of doctors, nurses, proper diagnosis and treatment have been considered or not [10]. Healthy communities characterized by a significant decrease in mortality, morbidity and disability became the main aim in Punjab. This sort of purpose can be attained by well-organized and efficient health services provided to patients [13]. Out-patient care is important for strengthening the primary health care services and structure of health networks in basic and rural health care centers [14]. Our results confirmed that better services after decentralization provided at OPD of BHU and RHCs health facilities have improved the number of patients in OPD. Previous research carried out in Norway [15], Iran [16] and Pakistan [17] revealed that good services are a substantial determinant of the delivery of health services for outdoor patients.

5. CONCLUSIONS

The present research concludes that improving healthcare services and management in OPD can be an effective strategy to attract patients to the eradication of disease and increase in survival rate. This study can be useful to analyze the beneficial effects of a decentralized health system in different districts of Punjab and how decentralized system can improve the quality-of-service delivery by some interventions at larger cohort.

6. DECLARATION AND ETHICAL STATEMENT

The results of this manuscript are original. The same materials are neither published nor under consideration elsewhere. The approval of all authors has been obtained before publication. The ethical standards were approved by the IRB (Institutional Review Board) of University of Lahore.

7. CONFLICT OF INTEREST

The authors declared no conflict of interest.

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