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Satisfaction level of tuberculosis patients regarding their access to TB care and prevention services, delivered through Public Private Mix model in Pakistan

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Abstract

Objective: The private healthcare providers (PHCP) are believed to improve access to healthcare services in Public-Private Mix (PPM) projects, as they are considered first point of contact for healthcare. The purpose of this study was to know the satisfaction level of TB patients.

Design: A questionnaire-based, cross-sectional study was carried out during November and December 2017 for 572 under-treatment patients registered with PHCPs in the PPM project. Lot quality assurance sampling technique was used to randomly select 19 districts from sample frame of 75 districts. In each selected district, data collector retrieved TB register of 8 months (Jan – Aug 2017) and systematically selected patients by fixed periodic interval. SPSS (version 24.0) was used to analyze the data.

Results: Study included 53% (n=301) of males and 47% (n=271) of females, with mean age of 38 years (SD, ±18). Almost half of the participants were illiterate (51%, n=289) and 64% (n=365) were non-earning members of the family. In practice, most of the participants visit private providers (71%, n=407), including private hospital/clinic (44%) and traditional practitioners (27%; n=153). 55% of participants visited the current doctor because of clinic's proximity to residence. 82% of the participants (n=469) were satisfied with the TB care services and 85% (n=488) said that they would recommend this clinic to others.

Conclusion: PHCPs are preferred providers for individuals, which is consistent with findings of other studies. Though they are satisfied with TB care and services, interventions should

be introduced to reduce the financial burden on the patient. Partnering PHCP is a way forward to ensure universal health coverage and better health outcomes of the population.

Introduction

In response to The End TB Strategy, countries should place patient at the center of care delivery system by adopting innovative and cost-effective approaches. It is essential to advance the fight against TB by promoting access and utilization of healthcare services, so that goal of ending TB by 2030 is achieved [1].

The perception of patient about his/her own health status is a determining factor for patient's treatment adherence and treatment outcome [2]. Additionally, evidence suggests that Public Private Mix (PPM) intervention has achieved increased case notification, treatment outcome and patient satisfaction [3,4].

The link between treatment adherence and patient satisfaction level is already established and it is demonstrated that dissatisfied patients may become non-compliant to treatment protocols or miss their consultation appointments [5,6]. On the contrary, satisfied patients are less likely to encounter challenges in gaining access to healthcare services [7]. Therefore, focus of medical attention is shifted from illness-centered care to patient-centered care [8].

Private healthcare providers (PHCPs) are believed to improve access to healthcare services and in many of these PPM projects, PHCPs are considered a first point of contact for the healthcare [9]. The PHCPs constitute most part of the healthcare system. However, cost of care is higher for private doctors, whereas it is lower at the clinics enrolled with non-governmental or welfare organizations [10-12].

Patient satisfaction surveys are planned to examine patients' need and expectation by collecting patient's opinion on healthcare services and their delivery [13]. Patient satisfaction is perceived gratification of the patient's needs and desires in response to healthcare services [14]. Exploring patient's satisfaction level is helpful in assessing responsiveness of the healthcare system [15], which is an important part of healthcare system. It also helps in understanding that how well patient's needs are met and helps in assessing process of care [15].

Improving access to and utilization of healthcare services is pivoted upon accessibility, acceptability and affordability. Accessibility refers to individuals' recognition of need for the healthcare services and their willingness to utilize those services. However, access to healthcare services is influenced by social, cultural and environmental factors [16]. Affordability determines if a person has adequate resources to pay for cost related to healthcare services [17]. However, acceptability is poorly defined dimension of access. With inconsistencies found in literature, it can be described as patient's perception about his/her participation in an intervention and about the perceived or actual effectiveness of the interventions [18]. However, it is argued that perception about acceptability may likely to change with actual experience of the intervention [19].

The purpose of conducting patient satisfaction surveys and appraising TB patient's access to healthcare services is a cornerstone of efforts for improving quality of care. Therefore, apprising patient's access to healthcare services, by utilizing three dimensions of access – accessibility, acceptability and affordability – is main objective of this study.

Material and Methods

Aim of the Study

The aim of the study was to examine the satisfaction level of tuberculosis patients regarding access to TB care and prevention services, delivered through PPM-enrolled private healthcare providers. The study was planned and executed as part of End of Project (EoP) Evaluation of New Funding Mechanism (NFM) of Public-Private Mix model, funded by Global Fund and implemented by Mercy Corps Pakistan along with its partners.

Study Settings

As part of Pakistan's National TB Control Programme, Mercy Corps Pakistan has implemented NFM from July 2015 to December 2017 in 75 districts of Pakistan along with its 7 implementation partners.

Study Design

A population-based cross-sectional survey was carried out by using quantitative method of data collection from November to December 2017.

Sampling Strategy

Two-stage sampling method was used to identify and recruit the study participant.

Sampling of District: At first stage, proportional stratified random sampling is done to select a lot of 19 districts (using lot quality assurance sampling technique) from sample frame of 75 districts. Five strata were developed, which are commonly used in other national-level surveys, for the purpose of sampling, including Punjab, Sindh, Khyber Pakhtunkhwa (KPK),

Balochistan and others (Islamabad Capital territory, Azad and Jammu Kashmir (AJK), Gilgit Baltistan(GB)). Implementation districts were organized into strata and sampled according to the respective weight of population districts. District names were organized into stratum and randomization was done in Microsoft Excel, using randomization function. Sampling result is given below in Table 1.

Stratum	Total Districts in Stratum	Weighted %age	Sampling	Sample Districts
Punjab	27	36%	7	Rajanpur
				Sahiwal
				Jhang
				Pakpattan
				Bhakkar
				Narowal
				Sialkot
Sindh	16	22%	4	Badin
				Larkana
				Umerkot
				Khairpur
KPK	15	20%	4	Malakand
				Swat
				Nowshehra
				Charsadda
Balochistan	9	12%	2	Quetta
				Lasbela
AJK, GB and Islamabad	8	10%	2	Islamabad
				Bhimber
Total Districts (n)	75	100%	19	

Table 1: Sampling of District

Sampling of Participant: At second level, sample size was calculated by using online tool (http://www.raosoft.com/samplesize.html). For this purpose, population size was taken from notification data reported for July 2015 – August 2017, i.e., 72,183 all type cases. By

keeping confidence level at 95% and confidence interval (margin of error) at 4, the recommended sample size was 596.

The sample size was achieved from the notification record of 8 months, i.e., Jan 2017 to August 2017. Notification record of period June 2015 – December 2016 was not included because of possible difficulty in reaching those patients, who have completed their treatment. Recommended sample size was distributed proportionately among 19 districts, i.e., district having more case notifications had sample size proportion to its size. District TB Register (TB03) of the said period of 19 selected districts were used for enlisting patients and potential respondents were selected systematically from the list, e.g., every nth number of the listed patients. Randomization number was allocated to each districts by lead researcher to avoid any potential bias of the data collector.

Recruitment of Participations

In each selected district, data collector retrieved TB03 record of 8 months and prepared list of systematically selected patients. After this, patients' names were organized into clusters based on their geographical location, as mentioned in TB03 record. Patients having incomplete contact details (contact number and address) were excluded from the list of selected patients. All patients were contacted telephonically (if contact number was given) before visiting them and informed consent was sought.

Data Collection

The study used "patient satisfaction measurement tool" that aimed to appraise the patient's access to healthcare services. In terms of utilization of services, access is measured through

accessibility, affordability and acceptability as proposed by Gulliford et al. (2002) [16]. Study adapted satisfaction-related variables from validated tools [20-22] and modification were included to make them fit-for-context. Data collection tool was translated into local language (i.e. Urdu) and collected using Open Data Kit (ODK) Collect.

Project evaluation team (FN, SMA, NA, SH) developed patient satisfaction measurement tool and imparted training to data collectors on data collection and transfer. Training session included objective of study, underlying theoretical concepts, orientation on tool and role plays. Tool was pre-tested before its actual use.

Data Analysis

Data sheet was imported to IBM SPSS (version 24.0) and data was checked for anomalies and missing data were treated accordingly. Basic descriptive analyses were performed and results are presented in the form of frequencies, percentage, mean and standard deviation.

Ethics Approval

Before commencement of the study, ethical approval was sought from ethical review committee of International Research Force, Pakistan. Reference number of ethical approval is IRFIRB092017/MC02.

Results

Overview of Participants

Due to data completeness issues combined with security concerns in two of the selected districts, we achieved 572 sample, instead of desired sample size of 596. Sample population

included 53% (n=301) of males and 47% (n=271) of females, with mean age of 38 years (SD, ±18). 82% of the recruited females (n=224) were housewives, 14% of them (n=37) were students and 73% of the recruited females (n=197) were having education below 5 class.

Overall, almost half of the recruited population was illiterate (51%, n=289) and 64% (n=365) of them were non-earning. 45% (n=256) of the recruits were bacteriologically-confirmed and 55% were clinically diagnosed cases, including 42% (n=242) of pulmonary cases and 13% (n=74) of extra-pulmonary cases. Moreover, 93% of them (n=533) were category-I (Cat-I) patients and remainder (7%, n=39) were category-II (Cat-II) patients (Table 2).

Characteristics	**Variables**	**Number (percentage)**
Sex	Male	301 (53)
	Female	271 (47)
Age	15-24	180 (31)
	25-34	101 (18)
	35-44	75 (13)
	45-54	78 (14)
	55-64	71 (12)
	More than 65	67 (12)
Mean Age	Years(SD)	38 (±18)
Level of Education	Illiterate	289 (51)
	1 to 5 grade	86 (15)
	6 to 8 grade	58 (10)
	9 and 10 grade	76 (13)
	11 to 14 grade	55 (10)

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	15 and 16 grade	8 (1)
Occupation	Unemployed	78 (14)
	Housewife (unemployed)	224 (39)
	Student (unemployed)	63 (11)
	Farmer	41 (7)
	Labour	77 (13)
	Small Business	44 (8)
	Govt. employee	9 (2)
	Private employee	36 (6)
Disease Site	Pulmonary (Bac+)	256 (45)
	Pulmonary (clinically-diagnosed)	242 (42)
	Extra-pulmonary (clinically-diagnosed)	74 (13)
Treatment Category	Cat – I	533 (93)
	Cat – II	39 (7)

Table 2: Overview Characteristics of Study Participants

ACCESSIBILITY

Accessing Healthcare Services

Generally, for health seeking most of the participants visited private providers (71%, n=407), including 44% visited private hospital/clinic and 27% (n=153) visited traditional practitioners (herbalist, spiritual healer etc). However, 29% of respondents visited government hospital for seeking healthcare services. Slightly higher percentage of female (74%; 200/271) visited private facilities for seeking healthcare services as compared to

males (69%; 207/301) visited private healthcare facilities. More than half of the participants (n=314, 55%) visited presently serving PHCP because he was the closest service provider.

Survey participants also provided reasons for the selection of healthcare facility type (public or private). 'Saves time' and 'close to residence' were the frequently reported reasons, regardless of participants' selection of healthcare facility type. 173 participants (out of 407; 42%) provided 'close to residence' as a reason to access private healthcare facilities, as opposed to 52 participants (out of 165; 31%) who preferred to visit government hospitals. Those who preferred to visit private clinic/hospital (n=254), reported 'good reputation of doctor' and 'past treatment experience' as major reasons for consulting PPM-enrolled PHCP. Only 14 participants decided to visit PPM-enrolled PHCP, as they were informed that TB treatment services are free of cost here.

It is also noted that participants' preferred choice of provider was different from their general health seeking practice. For example, 27% of the participants (n=153) visited traditional practitioners for seeking healthcare services, whereas, only 5% of participants (n=27) preferred them for seeking healthcare service. A vast majority of participants (73%; 419 out of 572) preferred to seek medical services from general practitioner or doctor.

It is reported that waiting time to consult doctor was more than the waiting time to collect medicine from the clinic staff. 36% of the participants (n=206) waited less than 15 minutes to receive consultation, however, 72% of participants (n=414) collected medicine in same time after consultation. 17% of the participants (n=99) waited more than 45 minutes to

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receive consultation from doctor. Surprisingly, there were 5% more females (20% female, 55/271; 15% males, 44/301) who waited for more than 45 minutes to receive consultation.

Access to Information

Currently, doctor is a primary source to share information concerning different aspects of TB care and prevention. A majority of patients, regardless of age, sex and education, reported that they received information about treatment duration (94%, n=540) and significance of taking regular medicine (90%, n=514). One fourth of the participants (n=146) claimed that they were aware about TB symptoms and its treatment before they were diagnosed with TB. Almost half of the participants (49%, n=283) were told about the possible side or unwanted effects of the anti-TB drugs, however, 42% of them (n=240) were informed about their response when they experience any unwanted side effects. Almost 86% of the participants were aware of their correct treatment duration, i.e., either 6 months or 8 months, whereas remainder reported different treatment durations.

Access to Patient

67% of the participants (n=384) said that they will allow anyone to contact them or visit their home for treatment reminder and other treatment-related support. On the contrary, 28% of the participants (n=162) said that they will not allow any contact or visitor. Additionally, 60% of the participants informed that they were not contacted by anyone regarding their TB treatment. In regards to bacteriologically confirmed TB cases (n=256), it was observed that only 57% of these cases (n=147) were contacted during the treatment period for any purpose.

AFFORDABILITY

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Care-related Responsibility and Cost of Treatment

Almost one fourth of the participants (27%; n=158) claimed that they were responsible for their own treatment-related expenses. 66% of the participants mentioned their dependence on the male member of their family, including husband (n=132, 23%), father (n=112, 20%), son (n=86, 15%) and brother (n=45, 8%). There were only 12 participants who were dependent on mother for their treatment-related expenses.

The mean cost for transportation was 306 PKR for round trip between clinic and residence, however, median cost was 100 PKR. An independent sample t-test was conducted to compare mean transportation cost between male and female. There was a significant difference in the mean transportation cost between male (M=160, SD= 267) and female (M=467, SD=1526) conditions; t (285) = -3.26, p=0.001. The result suggests that females spend more on transportation cost as compared to males, which can potentially limit the access of females to PHC facilities.

Livelihood Challenges

A significant proportion of the survey participants (65%) reported no livelihood challenge. However, 35% of the participants (n=201) reported different type of challenges related to their work or education. 61 participants (30%, 61/201) said that they had to work for less working hours that affected their earning potential, hence affected income. 31% of the participants (n=62) reported that they had to take leave from work and 52 participants quitted their jobs because of disease. Out of 63 students, 17 students (27%) reported that they had to either quit studies or it affected their education badly.

ACCEPTABILITY

Responsiveness of Healthcare Provider

A simple majority of the participants was agreed that doctor was respectful to them (n= 484, 84%) and he listened to them whenever they had any complain (n=485, 85%). In addition, they also agreed that paramedic was respectful to them (n=485, 85%).

Patient Satisfaction

Overall, 82% of the participants (n=469) were satisfied with the TB care services. The correlation between patient's perception about adequacy of consultation time and their satisfaction level was found to be statistically significant at 0.01 level (2-tailed), r=0.789, n=572, p= 0.00. 83% of the participants were satisfied with time doctor had spent on him/her for consultation. 66% of the survey participants said that they are likely to visit the same clinic in case of any other healthcare problem. A significant proportion of survey participants (85%, n=488) said that they will recommend this clinic to others.

Patient's Privacy and Confidentiality

60% of the participants said that they will feel bad, if their identity as tuberculosis patient is disclosed in the community. A Chi-square test of independence was conducted to compare the frequency of such cases in males and females. It was found that feeling about disclosure of their identity as TB patient is independent of gender ($\chi 2$ (2) = 1.66, p=0.44). A significant proportion of survey participants (79%) perceived that their personal information was kept secure at clinic and only 1% of the participants had doubt about the security of the personal information.

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Only 15% of the participants said that they will have problem in sharing their contact details, including contact number and home address. 80% of the participants (303 out of 384), who allowed anyone to contact or visit home for reminder and support purposes, also said that they would not have problem sharing their contact details, including contact number and home address.

Discussion

The study measured patient satisfaction level upon three aspects of the quality of care, namely accessibility, affordability and acceptability. To our knowledge, it is the first study to measure the satisfaction level of persons with tuberculosis, who are consulting private healthcare providers for tuberculosis prevention and care services. A link between satisfied patients and positive treatment outcome is already established [23,24], hence TB eradication efforts should include mechanisms to record patient satisfaction with TB care and prevention services [24].

The results showed that individuals' preferred choice of healthcare provider (doctor) was different from the provider type they visit in practice (informal providers), however, most of them consult private healthcare provider (both formal medical practitioners and traditional or informal providers) in case of any ailment. Almost 80% of the patients contact private healthcare system in case of illness due to unavailability of healthcare professional and limitation of resources in public sector. In addition, belittling private healthcare providers or system is gradually fading away [25] as it has become a long standing fact that most of the healthcare services are delivered through the private healthcare system [26,27].

Therefore, establishing public-private partnership for health system strengthening is integral in sustaining long term positive effect on the health status of people [28].

Despite free availability of TB drugs, some persons with tuberculosis have incurred cost in getting medicine. Elsewhere in the world, where TB drugs were provided free of charge, same situation has been reported [28,29]. Given the poor nutritional status of the persons with tuberculosis, doctors prescribe additional supplements, for which they have to pay out of their pockets. In cases, where additional medication or supplements are warranted, programs should aim to provide them free of cost [29]. Nonetheless, better nutrition along with other factors (housing, habitat, hygiene, sanitation) are attributed to the decreased tuberculosis notifications [30]. In addition, loss of job and reduced income add financial hardships to a person affected with tuberculosis [29]. Therefore, financial support schemes (e.g., insurance) and social support mechanism can be introduced to reduce economic burden with careful ways of governing such initiatives [31].

Our study showed that 82% of the participants (n=469) were satisfied with the TB care services delivered at the private healthcare facilities. However, measures of patient satisfaction are related to several indicators, including physical infrastructure, behavior of providers, availability of medicine, emotional support, cost of service and respect to patients' choice [32]. Our study showed positive response on almost all of these indicators that somehow explain patient's high satisfaction level with services. On the contrary, there are studies showing low satisfaction level of the patients who have received services from public health care facilities [33-35].

Conclusion

Inter-dependence between patient's satisfaction and healthcare planning is inevitable for developing responsive healthcare system. In Pakistan, like other developing countries, private healthcare sector is an integral constituent of the healthcare system. Consistent with the findings of previous studies, private healthcare providers are preferred choice for most of the individuals. Therefore, healthcare agencies or regulators should give due attention to private healthcare sector, so that response to serious health conditions like tuberculosis can be prepared and services are delivered in a coordinated manner. Partnering PHCP is a way forward to ensure universal health coverage and better health outcomes of the population. Additionally, it is also important to acknowledge the presence of informal healthcare providers. Therefore, a national-level dialogue for their engagement and regulation should be initiated to strengthen healthcare delivery system. Patient satisfaction survey is an essential tool to assess the responsiveness of system by capturing patients' expectations. Planning of healthcare services, inclusive of people's needs, can subsequently reduce economic burden of illness and can improve health outcomes and wellness of people.

Authorship

SMA, NA, FN contributed substantially to the conception and design of the work. MI and AT ensured data quality. SMA, NA, AR, FN, AT, MU planned data analysis and MI and MU conducted statistical analysis, MU also drafted the interpretation of statistical tests. SMA drafted the initial draft and all authors approved the final version.

Data Availability

Survey data will be provided by the corresponding author upon request.

Conflict of Interest

None of the authors has any conflict of interest

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References

1. World Health Organization. Global Tuberculosis Report 2015. Geneva, Switzerland: WHO, 2015.
2. Hansel NN, Wu AW, Chang B and Diette GB. Quality of life in tuberculosis: Patient and provider perspective. Qual Life Res 2004; 13: 639-652.
3. Arora VK, Sarin R, Lönnroth K. Feasibility and effectiveness of a public-private mix project for improved TB control in Delhi, India. Int J Tuberc Lung Dis 2003; 7:1131-1138.
4. Ambe G, Lonnroth K, Dholakia Y, et al. Every provider counts: effect of a comprehensive public-private mix approach for TB control in a large metropolitan area in India. Int J Tuberc Lung Dis 2005; 9:562-568.
5. Dang BN, Westbrook RA, Black WC, Rodriguez-Barradas MC and Giordano TB. Examining the link between patient satisfaction and adherence to HIV care: a structural equation model. PLoS One 2013; 8(1): e54729.

6. Chimbindi N, Barnighausen T and Newell ML. Patient satisfaction with HIV and TB treatment in a public programme in rural KwaZulu-Natal: evidence from patient-exit interviews. BMC Health Serv Res 2014; 14(32).
7. Roberts KJ. Physician-patient relationships, patient satisfaction, and antiretroviral medication adherence among HIV-infected adults attending a public health clinic. AIDS Patient Care STDS 2002; 16(1): 43-50.
8. Lewin S, Skea Z, Entwistle V, Zwarenstein M and Dick J. Interventions for providers to promote a patient-centred approach in clinical consultation. Cochrane Database Syst Rev 2001; CD003267.
9. Lönnroth K, Uplekar M, Blanc L. Hard gains through soft contracts: productive engagement of private providers in tuberculosis control. *Bull World Health Organ*. 2006; 84:876-883.
10. Khan J, Malik A, Hussain H, et al. Tuberculosis diagnosis and treatment practices of private physicians in Karachi, Pakistan. East Mediterr Health J 2003; 9:769-775.
11. Lönnroth K, Thuong LM, Lambregts K, Quy HT, Diwan VK. Private tuberculosis care provision associated with poor treatment outcome: comparative study of a semi-private lung clinic and the NTP in two urban districts in Ho Chi Minh City, Vietnam. Int J Tuberc Lung Dis 2003; 7:165-171.
12. Ahmed M, Fatmi Z, Ali S, Ahmed J, Ara N. Knowledge, attitude and practice of private practitioners regarding TB-DOTS in a rural district of Sindh, Pakistan. J Ayub Med Coll Abbottabad 2009; 21:28-31.

13. Onyeonoro UU, Chukwu JN, Nwafor CC, Meka AO, Babatunde IO, Madichie NO, Ogbudebe C, Ikebudu JN, Oshi DC, Ekeke N, Paul NI and Chukwuma BD. Evaluation of Patient Satisfaction with Tuberculosis Services in Southern Nigeria. Health Services Insights 2015; 8: 25–33.
14. Health Boards Executive. Measurement of patient satisfaction guidelines: health strategy implementation project. Tullamore, Ireland: The Health Boards, 2003.
15. Barry MJ and Edgman-Levitan S. Shared decision making – the pinnacle of patient-centered care. N Engl J Med 2012; 366(9): 780-781.
16. Gulliford M, Figueroa-Munoz J, Morgan M, Hughes D, Gibson B, Beech R and Hudson M. What does 'access to health care' mean? J Health Serv Res Policy 2002; 7(3): 186-188.
17. Axene DV. (2003) Health care affordability: a valuable concept in understanding our health care system challenges. Health Section News 2003; 45: 20-22.
18. Sekhon M, Cartwright M and Francis JJ. Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. BMC Health Serv Res 2017; 17:88.
19. Andrykowski MA, Manne SL. Are psychological interventions effective and accepted by cancer patients? I. Standards and levels of evidence. *Ann Behav Med* 2006; 32(2): 93-97.
20. Babikako HM, Neuhauser D, Katamba A and Mupere E. Patient satisfaction, feasibility and reliability of satisfaction questionnaire among patients with pulmonary tuberculosis in urban Uganda: a cross-sectional study. Health Res Policy Syst 2011; 9(6): 1-13.

21. Ssengooba W, Kirenga B, Muwonge C, Kyaligonza S, Kasozi S, Mugabe F, Boeree M, Joloba M, Okwera A and PanACEA Consortium. Patient satisfaction with TB care clinical consultation in Kampala: a cross sectional study. Afri Health Sci 2016; 16(4): 1101-1108.
22. Nezenega ZS, Gacho YH and Tafere TE. Patient satisfaction on tuberculosis treatment service and adherence to treatment in public health facilities of Sidama zone, South Ethiopia. BMC Health Serv Res 2013; 13:110.
23. Shargie EB, Lindtjørn B. Determinants of Treatment Adherence Among Smear-Positive Pulmonary Tuberculosis Patients in Southern Ethiopia. PLoS Med 2007; 4(2): e37.
24. Vijay S, Kumar P, Chauhan LS, Vollepore BH, Kizhakkethil UP, Rao SG. Risk Factors Associated with Default among New Smear Positive TB Patients Treated Under DOTS in India. PLoS ONE 2010; 5(4): e10043.
25. Shaikh, BT. Private sector in health care delivery: a reality and a challenge in Pakistan. J Ayub Med Coll Abbottabad 2015; 27(2):496–498.
26. Pakistan Medical Research Council. Health profile of people of Pakistan. National Health Survey of Pakistan, Islamabad, 1998.
27. National Institute of Population Studies and ICF International. Pakistan Demographic and Health Survey 2012-13. Islamabad, Pakistan, and Calverton, Maryland, USA: NIPS and ICF International, 2013.
28. Meghani ST, Sehar S and Punjani NS. Comparison and analysis of health care delivery system: Pakistan versus China. Int J Endorsing Health Sci Res 2014; 2(1): 46-50.

29. Lienhardt C. From Exposure to Disease: The Role of Environmental Factors in Susceptibility to and Development of Tuberculosis. Epidemiol Rev 2001; 23(2): 288-301

30. Ayé R, Wyss K, Abdualimova H, Saidaliev S. (2010) Household costs during different phases of tuberculosis treatment in Central Asia: evidence from Tajikistan. BMC Public Health 2010; 10:18.

31. McIntyre D, Thiede M, Dahlgren G, Whitehead M. What are the economic consequences for households of illness and of paying for health care in low- and middle-income country contexts? Soc Sci Med 2006; 62:858-865.

32. Jenkinson C, Coulter A, Bruster S, Richards N, Chandola T. Patients' experiences and satisfaction with health care: Results of a questionnaire study of specific aspects of care. *Qual Saf Health Care* 2002; 11:335–9.

33. Kwateng KO, Lumor R and Acheampong FO. Service quality in public and private hospitals: A comparative study on patient satisfaction, Int J Healthc Manag 2017; DOI: 10.1080/20479700.2017.1390183

34. Owusu-Frimpong N, Nwankwo S, Dason B. Measuring service quality and patient satisfaction with access to public and private healthcare delivery. Int J Public Sector Manag 2010; 23(3): pp. 203-220.

35. Shabbir A, Malik SA, Malik SA. Measuring patients' healthcare service quality perceptions, satisfaction, and loyalty in public and private sector hospitals in Pakistan. Int J Qual Reliab Manag 2016; 33(5): 1-29