BARRIERS TO REHABILITATION TREATMENT AMONG POLIOMYELITIS INFECTED PATIENTS IN KARACHI, PAKISTAN: A MIX-METHODS STUDY

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ABSTRACT

OBJECTIVE: The study was aimed at identifying the potential barriers to polio rehabilitation treatment in patients of Karachi, Pakistan.

METHODS: A mix-methods study was conducted in the city of Karachi, Pakistan for 6 months which gathered data from polio survivors as well as physical therapists who were involved in rehabilitation treatment of polio patients. The study had a quantitative part supplemented by a questionnaire and a qualitative part in which in-depth interviews were conducted. It was approved by the Ethical Committee of Research Review Board, Clifton Hospital and Board of Advance Study and Research (BASR) of Hamdard University, Madinatul Hikmah, Karachi, Pakistan.

RESULTS: A total of 102 physical therapists (PT) and 120 polio survivors consented to participate. The mean age of the PT was 36.1+6.4 years. Majority (77.5%) of PT was male and with work experience of over 10 years (44.1%). The mean age of the polio survivors was 30.6+8.4 years. Majority had low monthly family income i.e. PKR 15000 (US$ 147.38). Major barrier perceived by physical therapists was financial constraint (41.2%). Patients of Pashtun ethnicity (34.3%) were also perceived as a major barrier itself. Major and minor barriers perceived by polio survivors were financial constraint (95%) and treatment attendance (68.3%) respectively.

CONCLUSION: Pakistan's polio rehabilitation program is hindered by financial issues for most part coupled with low family income and directs treatment costs borne by patients. Directs treatment costs were found to be the biggest barrier to rehabilitation treatment.

KEY WORDS: Poliomyelitis (MeSH), Rehabilitation (MeSH), Barriers (Non-MeSH), Pakistan (MeSH).

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INTRODUCTION

Pakistan is struggling to meet global polio eradication status and the continuous emerging cases are a threat to Global Polio Eradication Initiative (GPEI).[1] It is one of the only two countries left in the world where poliomyelitis still endemic, the other being Afghanistan.[2] The disease commonly termed as polio, is an infectious disease caused by polio virus that affects the central nervous system resulting in partial paralysis of body i.e. paralysis of the limbs or complete paralysis in rare cases. The disease can be prevented by administering Oral Polio Vaccines (OPV) and Inactivated Polio vaccine (IPV). However, if polio is contacted it is incurable.[1] The rehabilitation process of poliomyelitis resulted paralysis takes many years of treatment and adds further to financial burden on patient, notwithstanding the emotional burden and compromised quality of life.[3]

The health care professionals acknowledge the complexity of the condition but patients' opinions and perceptions regarding poliomyelitis and rehabilitation are sometimes ignored. In general, there has been a lack of research that reports an insight to patients' perceptions and the factors which have potential to force polio patients towards dropping their rehabilitation program. The patient's perception vary significantly such as fear of polio rehabilitation treatment itself, treatment induced pain, lack of permission from family elders for treatment, hassle in attending regular rehabilitation sessions.[1,4] The significant difference in understanding is owing to unawareness and misinformation, it may be a taboo subject in many households.

In Pakistan, the rehabilitation treatment of poliomyelitis patients has been subjected to a number of potential barriers in the past. Those barriers can be social, physical, communicational or programmatic, recognizing them is vital to recuperation and enhancement of the rehabilitation process.[4] Each barrier is a complex interplay of several factors; inadequate fund for counseling, female therapists, female patients and treatment attendances, which accompany exhausting repetitive visits, etc. Moreover, the professionals have to be mindful of their patients and reach to their level of under-

standing if they want to deliver effective patient care. The ethnic obstacles encountered by women belonging to ethnic minorities or the access barriers faced by women workers in reaching remote areas, exists at the levels of both the patients and the health care providers. Patients also expressed frustration about not being able to continue medication therapy attributing to high cost and traveling long distances to seek care that adds further strain to the budget.[5-7]

Understanding this hierarchy and such patients' mixed experiences can help to navigate the system where professionals can be advocates for vulnerable patients in policy discussion and help redesign strategies and training of health workers. This study was conducted to identify the potential barriers to rehabilitation treatment in poliomyelitis patients of Karachi, Pakistan.

METHODS

A mix-methods study was conducted in the city of Karachi, Pakistan for 6 months i.e. March 2015 to August 2015. The study consisted of a survey and interviews targeting physical therapists and polio survivors.

Operational definitions Barriers to treatment

Factors which hinder patients to access health care service or seek medical treatment for an ailment are termed as barriers to treatment.[8-10]

Polio survivors

Patients initially diagnosed with poliomyelitis who have completed their rehabilitation treatment and do not require follow up were termed as polio survivors.[11]

Study setting

The selection of the city of Karachi was based on the fact that it is the largest city of Pakistan and home to a 23.5 million population.[12] In addition, it was very active in terms of confirmed polio cases in the country.[4,13]

Target population and inclusion / exclusion criteria

The target population comprised of physical therapists and polio survivors. Only those physical therapists who were involved with treatment of polio patients in the past were included. Patients who were diagnosed positive for poliomyelitis, completed their rehabilitation treatment and do not require follow up were approached. Such patients are termed as polio survivors.[11] This was determined by either asking patient's health care provider, physical therapist or checking treatment records.

Physical therapists not involved in treatment were left out of the study. In addition, those assisting in rehabilitation treatment were also not included. Similarly, patients currently undergoing rehabilitation treatment were not included. Incomplete / incorrect responses were also excluded.

Sample size calculation

There is no official data of the total number of polio survivors in Pakistan. Official data only reports figure of polio cases during last 15 years. Based on that, the number of polio cases reported in the district of Karachi was 92, highest in the province of Sindh.[13] Assuming the figure as general representation of polio patients' population of Karachi, the sample size for polio patients was calculated using online Survey System® sample size calculator.[14] The confidence level was set at 95% and interval was kept at 5%. The population data entered was the total number of polio cases of last 15 years in Karachi district i.e. 92 and sample size was found to be 74. There is no reported data on the number of physical therapists in Karachi. For this purpose, an online search was conducted and it was observed that 166 physiotherapy units are currently being operated in Karachi.[15] Furthermore; it was found that a total of 358 physical therapists were working in those units out of which 157 had treated polio patients in their line of duty. This was done by manual inquiry via telephone. The sample size for physical therapists was found to be 87 using the online Survey System® sample size calculator.[16]

Sampling technique

Convenient sampling was applied for gathering patient data and health care settings which involved large number of polio patients were approached. Same technique was applied for physical therapists. Both respondents were approached in their (off-peak) free time.

Research instrument

A research instrument in the form of a questionnaire containing questions related to demographic information and barriers to polio rehabilitation treatment was handed to the respondents. For the polio survivors, the questionnaire was also available in native Urdu language and in some cases assistance was also provided. The questionnaire for patients included questions on age, gender, ethnicity, family income and some related to perceived barriers to polio rehabilitation treatment.

Piloting

It was piloted on 12 polio patients. After piloting it was felt that polio survivors were affected by a combination of barriers and thus highlighted two barriers in their response with one appearing to be a major while other was minor. Consequently, the questionnaire was modified in to breakdown of major and minor barriers. The questionnaire for physical therapists included questions on age, gender, work experience and some related to perceived barriers to polio rehabilitation treatment. Moreover, it was piloted on 7 physical therapists and was validated. Other research instruments include a voice recorder for interviews. The qualitative aspect of the study adhered to COREQ guidelines for reporting qualitative data.[17] The information extracted from the interviews was noted down and recorded at the same time.

All research instruments were validated by a team of experts including medical professional, physical therapist, clinical pharmacist and university professors.

Statement of consent

Prior to handing the questionnaire, the respondents were briefed about the study and their consent was obtained. Further to this, they were sought consent for appearing in interviews.

Data analysis

The data thus gathered was entered in SPSS version 20 (Statistical Package for social sciences) and analyzed. Descriptive statistics, frequencies, Chi square (X^2) test and cross tabulation was applied. Statistical significance was accepted at P values less than 0.05. Triangulation was applied to the qualitative data and thematic analysis was conducted.

Ethical approval and patient consent

The study was approved by the Ethical Committee of the Research Review Board, Clifton Hospital (#CH-15-323) and Board of Advance Study and Research (BASR) of Hamdard University, Karachi, Pakistan. Prior to data collection an informed consent was sought from the respondents. Only those who consented were included.

Sequence of the study

A total of 113 physical therapists and 126 polio survivors were approached. Based on the inclusion exclusion criteria, 110 physical therapists and 120 survivors were found eligible for the study, the respondents were explained the purpose of the study and their consent was obtained after which 102 physical therapists and 120 survivors were available. The respondents were further invited for in-depth interviews for which 96 physical therapists and 74 polio survivors agreed to participate.

RESULTS

A total of 102 physical therapists and 120 polio survivors responded to the survey. The results are expressed below:

1. Physical therapists' demographic information

The mean age of the physical therapists was 36.1±6.4 years with minimum age of 25 years and a maximum of 55 years, out of which 23 were females. Major segment (44.1%) had worked for more than 10 years. The summary is tabulated in Table I.

2. Polio survivors' demographic information

The mean age of the polio survivors was 30.6±8.4 with minimum age of 18 years and maximum age being 55 years. Majority (N = 90, 75%) were male. Regarding ethnicity, it was evident that most of the polio survivors (N = 79, 65.8%) were Pashtuns followed by the Urdu speaking ethnicity. Most (N = 80, 66.7%) had average monthly family income between PKR 11,000-15,000 (US$ 108.08-147.38) All reported values in US$ when US$ 1.0 was equal to PKR 101.78. The summary of the results is tabulated in Table II.

3. Barriers to polio rehabilitation treatment perceived by physical therapists

The physical therapists believed money is a major issue in the treatment. Almost half of the target segment (N = 42, 41.2%) held financial constraint as a barrier. A third of the target segment (N = 35, 34.3%) highlighted Pashtun as a major ethnic group which was not welcoming to rehabilitation treatment. A small segment (N = 11, 10.8%) mentioned regular treatment attendance as a barrier for patients. Some physical therapists (N = 7, 6.9%) mentioned hopelessness following the realization of lifelong disability as a barrier to follow treatment. Few (N = 5, 4.9%) raised the issue of treatment induced pain and very few (N = 2, 2%) mentioned being a female patient as a barrier to undergo treatment. The summary of barriers to rehabilitation treatment is presented in Table III.

4. Barriers to polio rehabilitation treatment perceived by polio survivors

A comprehensive majority (N = 114, 95%) opted for financial constraint as a major barrier to rehabilitation treatment, followed by non availability of female physical therapist (N = 4, 3.3%) and treatment attendance (N = 2, 1.7%). Moreover, minor barrier to rehabilitation was treatment attendance (N = 82, 68.3%) followed by non availability of female physical therapist (N = 28, 23.3%) and financial constraint (N = 10, 8.3%). The summary of barriers to rehabilitation treatment is presented in Table IV.

5. Cross tabulation

The cross tabulation of demographic variables of patients particularly the gender, ethnicity and monthly income was significantly associated with their perception of major barriers (P value <0.05) and minor barriers to polio rehabilitation treatment. The cross tabulation revealed that gender was significantly associated with perception of major barriers (P value <0.05) and minor barriers (P value <0.01). The variable of monthly income was associated with major (P value <0.01) and minor barriers as well (P value <0.05). In addition, the demographic variable of ethnicity was also statistically related to minor barrier (P value <0.01). The summary of cross tabulation of variables is presented in Table V.

6. Qualitative findings from physical therapists regarding barriers to polio rehabilitation treatment

Furthermore, the physical therapists were invited for in depth interviews regarding the barriers to treatment. A total of 96 physical therapists were available for the interviews. The qualitative findings revealed that majority of the cases of polio were from the Pashtun ethnicity. The respondents reasoned illiteracy and suspicions regarding supplementary immunization activity SIA as major factors for hype in cases among Pashtuns.

TABLE I: SUMMARY OF DEMOGRAPHIC INFORMATION OF PHYSICAL THERAPISTS

S. No.	Demographics	Sample (N=102)	Percentage	P - value
1				
Age	18-25 years	2	2	
	26-35 years	52	51	<0.01
	36-45 years	41	40.2	
	46-55 years	7	6.9	
Gender	Male	79	77.5	
	Female	23	22.5	<0.01
Work experience	Less than 5 years	16	15.7	
	Between 5 years to 10 years	41	40.2	<0.01
	More than 10 years	45	44.1	

TABLE II: SUMMARY OF DEMOGRAPHIC INFORMATION OF POLIO SURVIVORS

S. No.	Demographics	Sample (N=102)	Percentage	P - value
Age in years	18-25	40	33.3	
	26-30	24	20	
	31-35	30	25	
	36-40	12	10	<0.05
	41-45	6	5	
	46-50	5	4.2	
	51-55	3	2.5	
Gender	Male	90	75	
	Female	30	25	<0.01
Ethnicity	Pashtun	79	65.8	
	Urdu speaker	25	20.8	
	Punjabi	13	10.8	<0.01
	Baloch	3	2.5	
Average monthly family income in Pakistani Rupees (PKR)	5,000 – 10,000	5	4.2	
	11,000 – 15,000	80	66.7	
	16,000 – 20,000	17	14.2	<0.01
	21,000 – 25,000	6	5	
	Above 25,000	12	10	
Average monthly family income in United States Dollar ($)	49.13 – 98.26	5	4.2	
	108.08 – 147.38	80	66.7	
	157.21 – 196.51	17	14.2	NA
	206.34 – 245.64	6	5	
	Above 245.64	12	10	

TABLE III: BARRIERS TO POLIO REHABILITATION TREATMENT HIGHLIGHTED BY PHYSICAL THERAPISTS

Barrier to polio rehabilitation treatment	Sample (N=102)	Percentage	P-value
Financial constraint	42	41.2	
Pain during treatment	5	4.9	
Treatment attendance	11	10.8	
Pashtun Ethnicity	35	34.3	<0.01
Realization of lifelong disability	7	6.9	
Female gender	2	2	

"In my experience most of the cases are of the Pashtuns, they are mostly the sufferers mainly due to refusal to vaccinate their children, which is mainly due to illiteracy and suspicion regarding polio vaccination."(Interviewee 3, male)

The care givers of the polio patient usually are counseled by a physical therapist for the first time in which they are explained about the disease and its long lasting effect on the patient. The counseling also accompanies all the treatment details which are needed to be followed for a period of time and for the rest of the patient's life.

"When they arrive for the first time, all they know is that their child has suffered from a disease (polio), but they have no knowledge about it. It is then we tell them what actually is polio and how it has affected them, what needs to be done and how!"(Interviewee 14, male)

The physical therapists further explained that the care givers of patients usually seek a yes or no response on the question of whether the whole rehabilitation treatment will cure their child's ailment completely. The physical therapists try to answer in a neutral manner since it is very sensitive and emotional for the parents. At times it is met with mourning and regret.

"They (care givers) ask us (physical therapists) if this (rehabilitation treatment) will cure the problem (polio related disability) completely. We have to be very careful in selection of words because it has a dramatic impact on their (care givers) mind. Most of the time one of them cry and regret. The counseling is given in a motivational tone to pursue the parents to treat their child and do not get depressed and turn away" (Interviewee 43, male)

"The parents demand if this (polio rehabilitation) treatment will cure their child completely and expect

TABLE IV: BARRIERS TO POLIO REHABILITATION TREATMENT PERCEIVED BY POLIO SURVIVORS

S. No.	Demographics	Sample (N=120)	Percentage	P-value
Major barrier to polio rehabilitation treatment	Financial constraint	114	95	
	Non availability of female physical therapist	4	3.3	<0.01
	Treatment attendance	2	1.7	
Minor barrier to polio rehabilitation treatment	Financial constraint	10	8.3	
	Non availability of female Physical therapist	28	23.3	<0.01
	Treatment attendance	82	68.3	

TABLE V: SUMMARY OF CROSS TABULATION BETWEEN GENDER AND BARRIERS TO REHABILITATION TREATMENT

S. No.	Demographics	Barriers to rehabilitation treatment			P-value
		Major Barriers			
		Financial Constraints	Availability of female Physical therapist	Hassle in treatment attendance	
		Observed Count N (Expected Count N)			
Gender	Male	88 (85.5)	0 (3)	2 (1.5)	<0.05
	Female	26 (28.5)	4 (1)	0 (5)	
Monthly income (PKR)	5000-10000	5 (4.8)	0 (0.2)	0 (1)	
	10001-15000	78 (76)	2 (2.7)	0 (1.3)	
	15001-20000	16 (16.2)	1 (0.6)	0 (0.3)	<0.01
	20001-25000	6 (5.7)	0 (0.2)	0 (0.1)	
	Above 25000	9 (11.4)	1 (0.4)	2 (0.2)	
		Minor Barriers			
		Financial Constraints	Female polio patient	Hassle in treatment attendance	
Gender	Male	7 (7.5)	2 (21)	81 (61.5)	<0.01
	Female	3 (2.5)	26 (7)	1 (20.5)	
Monthly income (PKR)	5000-10000	2 (0.4)	0 (1.2)	3 (3.4)	<0.05
	10001-15000	5 (6.7)	18 (18.7)	57 (54.7)	
	15001-20000	0 (1.4)	4 (4)	13 (11.6)	
	20001-25000	0 (0.5)	1 (1.4)	5 (4.1)	
	Above 25000	3 (1)	5 (2.8)	4 (8.2)	
Ethnicity	Pashtun	7 (6.6)	2 (18.4)	70 (54)	<0.01
	Urdu speaker	3 (2.1)	16 (5.8)	6 (17.1)	
	Punjabi	0 (1.1)	8 (3)	5 (8.9)	
	Baloch	0 (0.3)	2 (0.7)	1 (2.1)	

a positive reply, this is a crucial point and this question needs to be carefully answered as parents' expectations shouldn't be hurt and truth must be spoken."(Interviewee 59, male)

Further to this, the physical therapist also opined that if the care givers of the patients are not adequately counseled, it has the potential to become a barrier to the rehabilitation treatment since the inadequate counseling paints a drab picture in their mind and force them to believe it can never be cured.

"It is very important to counsel them (care givers) in a positive way otherwise they'll get depressed and think their child can never be cured which brings them to the point of questioning the very need of treatment."(Interviewee 83, male)

Effects of the counseling by physical therapists on patients are given in figure 1.

Furthermore, some of the physical therapists also mentioned the ethnicity of Pashtun as a major barrier for two reasons. One being the ethnicity itself as most of the Pashtuns are conservative and would not allow the mother to take the polio infected child to the physical therapist alone. Hence, in absence of the head of family i.e. the father, the patient cannot undergo the treatment.

The Pashtun tribe is most conservative; they do not allow their wives or any female to take their children to clinic for treatment. They (child) will only come with male head of family, or any male family member, otherwise not! (Interviewee 81, male)

Moreover, if the child is a female, it is very difficult to convince the head of the family to let the child undergo treatment with a physical therapist of opposite gender. This problem is further complicated with the scarcity of female physical therapists in the field. Hence the ethnicity and female gender are major barriers to

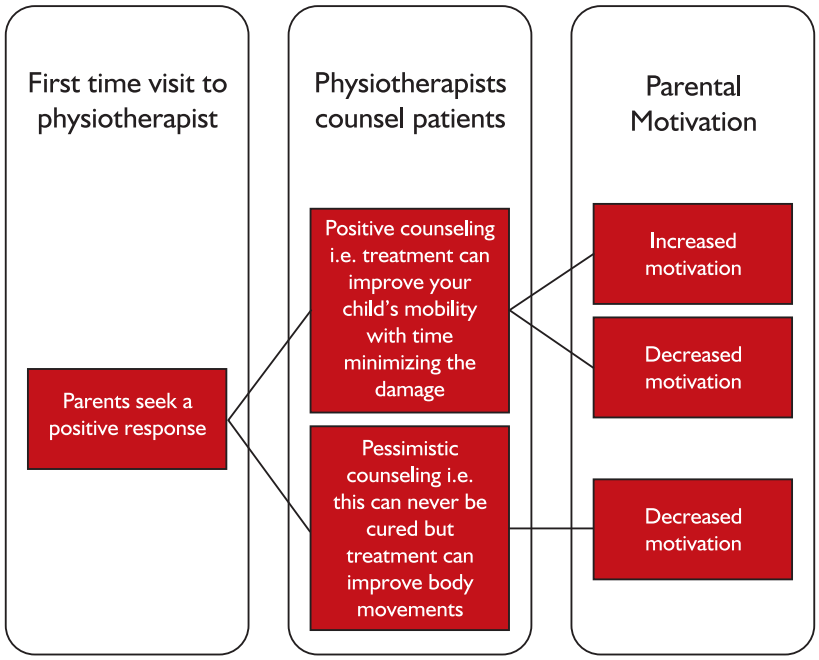

Figure 1: Effects of the counseling by physical therapists on patients

Figure 2: Determinants of financial constraints as a barrier to pursue polio rehabilitation treatment

treatment.

As far as the female polio patients are concerned, families try to look for a female physical therapist, and if the family is of Pashtun ethnicity, it is a major issue as it is impossible to convince him to let his child take treatment by a male physical therapist. There is a scarcity of females in the field and if this issue arise, it becomes very difficult to treat them. (Interviewee 35, male)

For this purpose, female physical therapists are prioritized in recruitment and if not, then non-therapist females are hired as technicians and trained so that the treatment of such patients can be carried out in supervision of a qualified male therapist. This provision is normally agreeable for the families.

"We look for female physical therapists to hire, but majority are male in the field. So we hire females as technicians and train them. They are best in such cases as this technique is acceptable to conservative families."(Interviewee 20, male)

In addition to this, money is a major barrier to undergo the whole course of the treatment since most families were from lower economic status hence it was very difficult for them to financially support the treatment. The physical therapists mentioned that patients from the lower economic status are given a discount in the treatment.

"They are asked if they can give 100-200 rupees per session where the session lasts for 1-2 hours as it is dramatically less than the standard session charges. Normal charges range from 400-800 rupees per session where a session lasts from 2-3 hours. In this way, the therapist is somewhat relieved as the session time is decreased and at the same time patients are given discount."(Interviewee 74, male)

7. Qualitative insights from patients regarding barriers to polio rehabilitation treatment

In addition to this, qualitative analyses from the polio patients who have completed their scheduled treatment were also invited for interviews. A total of 74 polio survivors consented to participate

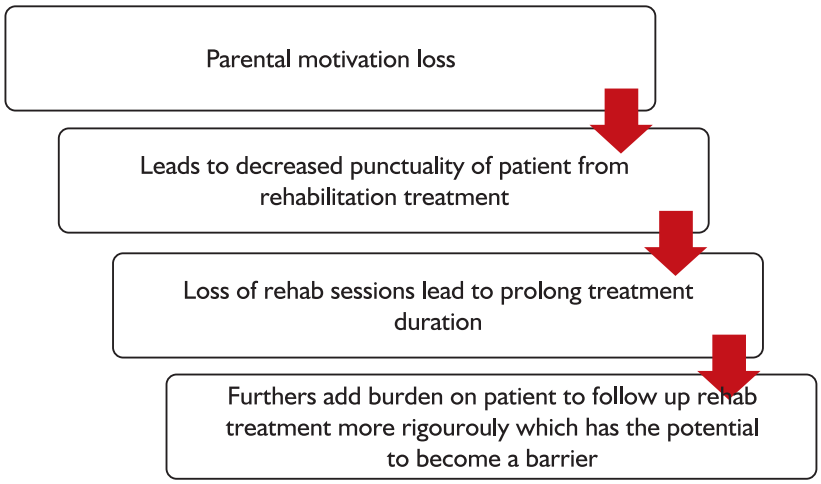

Figure 3: Flow chart of decreased parental motivation leading to hassle in treatment attendance

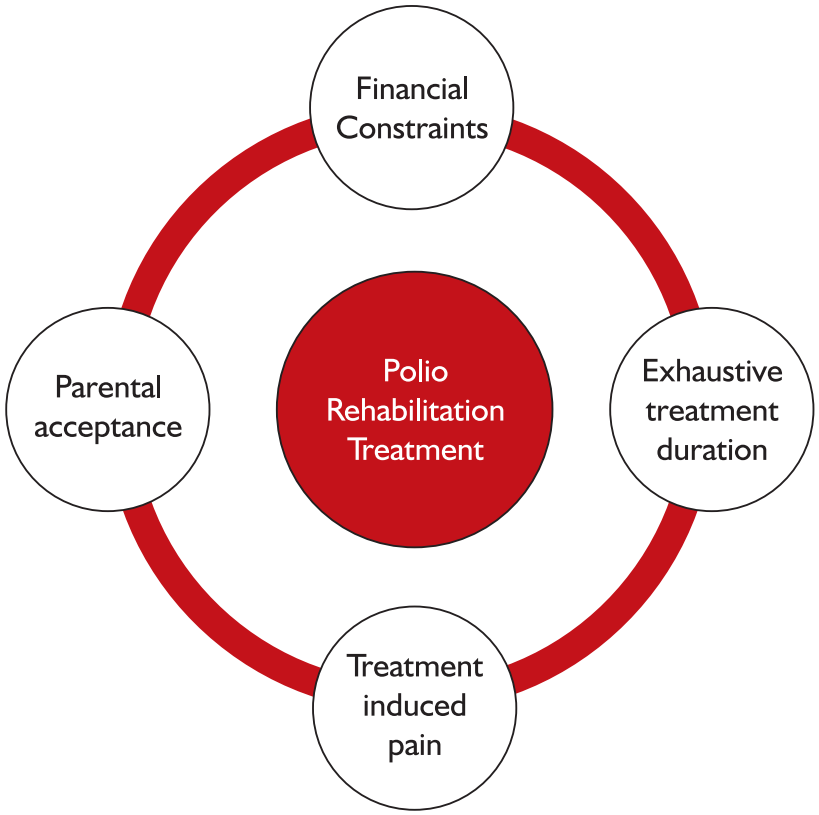

Figure 4: Patient's view of barriers to polio rehabilitation treatment by qualitative assessment

in the interviews. The questions related to barriers in the rehabilitation treatment were asked. The polio survivors revealed that money is the most concerning issue in undergoing the treatment since the treatment is quite long i.e. spread over years and it is common that the treatment may be discontinued due to financial constraints.

"Money matters a lot in this (polio rehabilitation) treatment. It is carried over a span of 10 years, but there is no guarantee if I (patient's care giver) will be able to meet all expenses and also save the money for the treatment throughout its duration. There are times in which one doesn't have enough money to support the treatment. For example if someone loses job or the family fell sick."(Interviewee 31, male)

"The treatment is long, years long! If the patient have more siblings then it is difficult to manage treatment costs. As the time passes, it becomes difficult for the patients to pursue treatment."(Interviewee 56, male)

Figure 2 shows various determinants of financial constraints as a barrier to pursue polio rehabilitation treatment.

The patients also opined that another determinant in the rehabilitation treatment is the parental view about poliomyelitis. The success of a rehabilitation treatment depends upon the parental eagerness and motivation to pursue the treatment. Decrease motivation can lead to another barrier i.e. the continuous sessions of rehabilitation which sometimes become a hassle for the care givers since it becomes difficult to visit the physiotherapy clinic with punctuality resulting in absence in some sessions.

"It all depends on the parents, if they perceive the treatment can not cure their child completely they will lose hope (and motivation) and will not take the rehabilitation seriously." (Interviewee 23, male)

"These regular sessions everyday of the week, it is very difficult for us (parents) to manage. We cannot be punctual; sometimes there's a law and order situation in the city and road blocks. These kinds of thing pose a difficulty for maintaining punctuality in attending sessions."(Interviewee 20, male)

Decreased parental motivation leading to hassle in treatment attendance are presented as flow chart in figure 3.

Moreover, there had been occasions

when the physiotherapy session resulted in pain in the body due to which the patients discontinue their treatment for some time. As a child, they develop a stigma from rehabilitation treatment which if not understood and dealt with in time might result in a major barrier.

> *"The exercise results in pain in the body, my child cried but we ignored it, as he grew up he developed a phobia from the treatment and he did not like to go the clinic due to pain from the treatment. It took several years and counseling sessions to convince him that the pain is temporary but the treatment is essential for his locomotion."(Interviewee 39, female)*

Patient's view of barriers to polio rehabilitation treatment by qualitative assessment are given in figure 4.

DISCUSSION

Karachi is a sprawling metropolis which samples all ethnicities of Pakistan at a single place. It is also regarded as pivotal point for exporting wild poliovirus, nationally and globally.18 With history of failures and relentless pursuit of non-vaccinations, these behavioral, religious, demographical, and financial barriers as sustained intervention of therapy were studied in depth within the views of patients who were treated, or have undergone treatment, as well as the perceptions of physical therapists.

A large percentage of physical therapists were reported to have an average age of 35 years, with almost half of them with an experience of more than 10 years in providing rehabilitation. The health care system of Pakistan paints an awful picture regarding the profession of physiotherapy which has long been neglected and currently there is a brain drain of physical therapists in Pakistan. Those who have spent considerable time in the field and well-known amongst patients are currently practicing.[19] As of the norm, majority of them are males (77.5%) and less than a quarter of females (22.5%). In Pakistan, majority of the females who study a degree in physiotherapy do not intend to practice the profession after graduation.[20] One of the reasons behind this is the fact that physiotherapy requires physical care which involves touching the patients. The society is not quite open to the idea of females as physical therapists. It is sometimes viewed as a taboo in the society mainly due to misinterpretation of religious views.[21]

The patients were found largely between the ages of 18-25 years (33.3%), trailed by a quarter in age between 31-35 years (25%) and few (20%) between 26-30 years. This was quite obvious as polio infects in early childhood and rehabilitation treatment continues for about 5-15 years.[3] Overall, only a quarter of patients were females (25%), indicating one out of every four polio patients to be a female, although the correlation of the gender to be high-risk for polio to other countries cannot be made as it has never been officially reported. However, almost three quarters of respondents were Pashtuns (65.8%). These findings lie consistent with a previous study of immunizations in Pakistan that show Pashtun ethnicity to be largely a high-risk group for polio.[4] It appears to contribute to a noteworthy obstacle in rehabilitation as viewed by a third of the physical therapists (N = 35, 34.3%), becoming an outlier to the other more common barriers, like financial dependency. (N = 42, 41.2%).

Pashtuns are an ethnic group being popular for observing strong religious beliefs, the females are restricted in interacting with males on every platform, and the males of the families are main decision makers. In case for rehabilitation of affected females, the families are, only open to female physical therapists. Considering the societal norms and traditions of Pakistan, treatment of females by male physical therapists is sometimes viewed as provocative. It may be due to the fear of breach of sexual boundaries in patient-therapist relationship.[22] Moreover, in the context of religion, treatment with opposite gender is usually preferred as a last resort.[21,22] In Pakistan, a dire need for active female therapists in clinics may resolve the problem. However, this is not the only problem faced by the Pashtuns.

In the past, immunizations campaigns were used for non health care reasons. Due to these events, a clustering of vaccine refusals among ethnic low-income Pashtuns and high-income populations was noted. Additionally, lack of knowledge about polio, lack of faith in the vaccine's effectiveness, misperceptions about vaccine related adverse events (e.g. infertility) caused mistrust among Pashtuns that only grew ever since.[4,13] The physical therapists contemplate ignorance and suspicions among the patients, indicating that along with vaccinations, rehabilitations are also likely to be misunderstood. Nevertheless, at the community level, conventional communication efforts by polio health workers should be conducted to gain trusts by identifying the perceptions of the affected families and clearing their misconceptions.

The biggest barrier though, is financial dependency. This is agreed upon by both the physical therapists (N = 42, 41.2%) and patients (N = 114, 95%), where most of the patients families (N = 80, 66.7%) have an average monthly wage of less than or equal to PKR 15000 i.e. US$ 147.38, and only a few with better living standards. The therapy for the polio affected has an exhaustive duration for treatment and financial constraints restrict families to seek complete and proper therapy. There is an urgent need to narrow the funding gap thereby increasing the chance of undergoing rehabilitations for those under acute and severe infection.[2]

Physiotherapy is a cornerstone management of polio and post-polio syndrome; it involves meticulous attention to intensive care during the acute paralyt-

ic phase. While some physical therapists believe that the hindrance to travel long distances by the handicapped to get proper care and management is also a barrier, the pain-induced therapy itself is a common complaint of the patients that encourages them from reaching out for the much-needed care.

Ideally, proper patient counseling that includes emotional and psychological support and a healthy relationship with the patients often builds motivation in the affected families to pursue treatment. While both have common grounds and a few conflictions in their beliefs for obstacles in rehabilitation, they reveal a deeper threat in tackling the health challenge, an inconsistent and perforated patient physician relationship.

Pessimistic patient counseling promotes lack of empathy for either side, discerning intentions that consequently damage security and trust. An ideal rehabilitation system for this public health challenge demands vigilance that cannot afford to slack off. A healthy patient physical therapist relationship needs repairing. Providing positive support to patients in all areas should include emotional and physiological uplifting with awareness sessions by direct communication to understand the disease and course of treatment for the affected families.[22] Fear of pain and exhaustion during the long duration of treatment needs encouragement and will empower the patient and family. This requires proper specialized training of therapists for bedside counseling for patients and their guardians or care givers that needs to be taken in immediate effect as a part of management of the disease.[23]

All of these barriers for rehabilitation need to be eliminated to help polio infected patients in Pakistan reintegrate in the society and to be productive in their life. The study reported the barriers in polio rehabilitation treatment in Karachi, Pakistan for the first time making it the primary study. However, due to sensitivity of the topic and current law and order situation of the country especially regarding poliomyelitis, the target population especially the patients seemed reluctant to respond thus, resulting in a small sample size. Nonetheless, results of the study can be generalized on the population and it can be considered as a foundation. Further digging in to the matter is highly recommended.

CONCLUSION

Poliomyelitis is an infectious disease of poverty. Our study highlighted low family income of the polio survivors. Since most of the patients in the country have to bear direct medical costs, Pakistan's polio rehabilitation program is hindered by financial issues and lack of knowledge regarding polio especially among Pashtuns. The health care authorities must formulate a strategy to assist patients financially in attending rehabilitation treatment program such as a health insurance policy regarding rehabilitation which covers financial costs and focus on polio awareness among Pashtuns. Moreover, the long term goals include changing the societal trend and views towards female patients being treated by male therapist. At the same time, the health care authorities concerned with regulating physical therapy profession in Pakistan must formulate a strategy to incorporate females towards studying and subsequently practicing physical therapy in Pakistan.

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CONFLICT OF INTEREST

Authors declared no conflict of interest

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AUTHOR'S CONTRIBUTION

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AAN: Concept & study design, acquisition analysis and interpretation of data, drafting the manuscript, final approval of the version to be published

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Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.12

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