

# Assessing Public Awareness of the Knowledge and Clubfoot about the Importance of the Treatment of Early Childhood

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## ABSTRACT

**Background:** With early attention, clubfoot is a disorder that can be treated and managed. However, a lack of knowledge regarding clubfoot among the general public may result in a delay in receiving treatment.

**Methods:** This cross-sectional study was conducted with survey poll included Hazara Division (Abbottabad, Mansehra, Haripur, Battagram, Upper Kohistan, Kolai-Palas, Lower Kohistan) residents and lasted six-months, from June 2022 to December 2022. The population of this study was the all participants who faced the issues of prognosis, and clubfoot and online survey was created by orthopedic specialists to gather information on the public knowledge of treatment options, prognosis, and clubfoot risk factors. Regardless of whether they were familiar with someone who had clubfoot, the target demographic was made up of persons from all age groups and both sexes in the general community. A team of orthopaedic specialists created a questionnaire to gather information on the general public's knowledge of clubfoot risk factors, treatments, and prognoses. Pilot research using the sample of the 80 individuals who aren't the part of main study was used to undertake initial evaluation of the questionnaire. Based on the comments from pilot test, questionnaire was modified. The data was obtained from selected participants and data was analyzed in SPSS.

**Results:** The online survey was finished by 746 individuals by the end of the research period from June 2022 to December 2022. A total of 520 respondents (69.7%) said they were unaware of clubfoot syndrome. 40 (5.4%) participants had a child having clubfoot syndrome, and the 34 (4.6 percent) were informed of the clubfoot since they themselves had a child with condition. Social media platforms were the most often used resource by respondents 284 (38.1%) for learning about clubfoot, followed by family and friends 148 (19.9 percent). Hereditary and genetic problems 435 (58.4%) and neurological abnormalities were the most commonly cited causes of clubfoot 297 (39.9 percent).

**Practical implication:** The current study was employed to determine how well the general population understood clubfoot and the benefits of early therapeutic intervention.

**Conclusions:** The findings indicate that there is little awareness of the clubfoot, which may be a result of a dearth of awareness programmes. In order to encourage patients to seek early treatment, we advise raising awareness of clubfoot using social media and open campaigns in the strategic locations, such as malls. This is vital since earlier treatment of the clubfoot is less intrusive and the results in the better patient's results when accompanied with regular follow-up.

**Keywords:** Awareness, Clubfoot, Perception, Congenital deformity, Foot deformity, Talipes equinovarus

## INTRODUCTION

Congenital structural malformation known as clubfoot is characterised by forefoot adduction, midfoot cavus, and hindfoot equinus. Males are more affected than females, and the most prevalent Musculo-skeletal birth abnormality all over the world.<sup>1</sup> Clubfoot may result in lifelong handicap if it is not treated. The person who had been affected may not able to wear the shoes and might walk with a lot of pain.<sup>2</sup> Thankfully, if the problem is caught early enough, surgery won't be necessary to fix the foot position. However, delaying the problem's treatment makes it difficult to offer non-surgical care.<sup>3</sup> The mainstream of clubfoot diagnoses are made clinically; radiography was not always necessary. Additionally, prenatal diagnosis can be performed using ultrasonography.<sup>4</sup> There are several treatment options for clubfoot management, and they can be divided into the non-operative and operational procedures. Multiple methods have been developed for casting and serial manipulation, which are the non-operative therapies for the clubfoot.<sup>5</sup> The Ponseti method, which is said to having high success rate and is accepted as the gold standard in most nations.<sup>6</sup> When non-operative approaches fail or there is a late detection, operational methods are applied.

Regular follow-up is required in both surgical and non-surgical therapies to evaluate progress, avoid relapse, and keep an eye out for problems. No of the type of treatment, a kid with clubfoot has a chance of relapse up to the age of 7. In order to reduce the chance of relapse, it is crucial that parents adhere to their treatment plan and are informed about the ailment and its prognosis. Lack of the awareness was seen to be the barricade to therapy, and public opinion of clubfoot is important for its early management.<sup>7</sup> However, there are few research available that evaluate public perceptions of clubfoot globally, and those that do demonstrate limited general audience awareness of the ailment.<sup>8</sup> To determine present knowledge gaps in public, current study

sought for measuring awareness of clubfoot and understanding on significance of treatment in early childhood. We predicted that all indicators would reveal poor public awareness and knowledge levels in the assessment. In order to increase the rates of the earlier treatment and the follow-up for this illness, the findings of present study will contribute to the development of a strategy for a public awareness campaign.

## METHODS

**Methods and Design:** This cross-sectional study was conducted with survey poll included Hazara Division (Abbottabad, Mansehra, Haripur, Battagram, Upper Kohistan, Kolai-Palas, Lower Kohistan) residents and lasted six-months, from June 2022 to December 2022. The population of this study was the all participants who faced the issues of prognosis, and clubfoot and online survey was created by orthopedic specialists to gather information on the public knowledge of treatment options, prognosis, and clubfoot risk factors

**Ethical consideration:** The study was approved by the Ayub Medical Complex's institutional review board for research involving human beings, and it complies with National Committee of Bio Ethics. When responding to survey questions, participants were completely free to do so and could opt out at any time. There were no prizes given to the participants. All the participants were provided with the written informed consent for current study to be published.

**Sample size:** A total of 746 individuals were took part in this cross-sectional study for a period of six months from June to December 2022.

**Study design:** The participants in this cross-sectional poll were all Hazara division citizens, which took place in study across six months from June to December 2022 in Mansehra, Abbottabad, and Haripur district of Hazara division. All age groups and persons

of both sexes were potential participants. In addition, the poll was only available to Pakistanis who had never taken part in a study on clubfoot. On the basis of the previous study with a margin of the error of 0.05, a population percentage of 72.3 percent, and a Z score of 0.95, the minimum sample size, or  $n = 308$ , was calculated using sample size equation (Cochran formula) as follows:  $Z\alpha = 0.95$ ,  $p = 72.3$  percent,  $d = 0.05$ .

**Study instrument:** A team of orthopaedic specialists created a questionnaire to gather information on the general public's knowledge of clubfoot risk factors, treatments, and prognoses. Pilot research using the sample of the 80 individuals who aren't the part of main study was used to undertake initial evaluation of the questionnaire. Based on the comments from pilot test, questionnaire was modified. All the authors, including an expert in community medicine, unanimously agreed on the final version.

Google Forms was used to produce the self-administered survey, which was then given out to study participants. People were given access to the questionnaire in various malls in Pakistan where computer terminals for filling it out. The participants are asked a series of questions concerning their sociodemographic information at the start of the questionnaire (gender, age, residence city, marital status and educational level). Following this part, there were 11 key clubfoot-related questions. If the respondent had no prior knowledge of clubfoot, a brief explanation of condition and the clinical illustration of condition were given. Closed-ended (Yes/No) and multiple-choice questions were given to participants to gauge their knowledge about, beliefs towards, and perceptions of the causes of clubfoot syndrome (Additional file 1).

**Statistical analysis:** Percentages and frequencies were utilized to express categorical data, likewise age and gender categories. Information sources and assumed causes of clubfoot among neonates were described using a multiple response dichotomy analysis. The degree to which demographic factors and knowledge of clubfoot are correlated was evaluated using chi-square testing. With SPSS version 26, all analysis was completed. Each analysis's threshold for significance was set at 0.05.

**RESULTS**

The survey was finished by 750 persons in total. Four of them were residents of countries other than Hazara division, so their data was not analysed. Table 1 lists the participant's perceptions and awareness of clubfoot. 69.7 percent of such respondents said they had read or heard of the clubfoot. 5.4% of all those surveyed having child with the clubfoot. For remaining questions, the respondents are required to choose their clubfoot-related information from the list of several options (Table 2). Our investigation revealed that social media (38.4 percent,  $n = 87$ ) was the most often used resource by respondents, followed by friends and family (19.9 percent,  $n = 45$ ).

Table 1: Attitudes, causes, and beliefs concerning clubfoot and their treatment

	Responses and Questions	Percentage	Frequency
Ever you read or heard about clubfoot?	Yes	30.3	226
	No	69.7	520
As you have affected child are you informed of the clubfoot	Yes	5.4	40
	No	94.6	706
Did you child having clubfoot?	Yes	87.5	35
	No	12.5	5

In addition, the respondents were questioned about the ideal time to begin treatment as well as what they thought should be first course of action for the clubfoot. Table 3 displays the responses in summary. 30.2 percent of respondents who were questioned about effectiveness of several treatments thought that casting helped between 41 and 60 percent of children who were born with clubfoots. However, 32.7percent of the respondents believed that surgery will improve disease in 41 to 60 percent of patients. 33

percent of survey participants thought that the physiotherapy was successful in treating clubfoot in between 41 and 60 percent of instances. Females were much more conscious of clubfoot than males were, according to chi-square test of the association ( $p < 0.001$ ).

Table 2: Common information sources of clubfoot

Variables	Percentage	Frequency
Social Media	38.4	87
Printed media	13.7	31
Radio and Television	5.7	13
Websites	16.8	38
Affected persons	5.4	12
Friends and Relatives	19.9	45

Educational attainment, age, marital status, and city of residence, on the other hand, did not significantly correlate with awareness of clubfoot, according to the results of the chi-squared test of independence. On the other hand, people having child with the clubfoot knew a lot more about condition than the others who didn't have a child or family with condition ( $p < 0.001$ ). A chi-square test of the association revealed a statistically significant relationship between knowledge and the perception of first-line clubfoot treatment ( $p < 0.001$ ). People who said that casting was first course of the treatment for the clubfoot were noticeably more knowledgeable about the condition.

Table 3: Respective knowledge of clubfoot treatment

Reponses and Questions		Awareness of clubfoot (%)		p
		Yes	No	
Clubfoot treatment initiation	1 to 4 years	19	33.4	0.001
	6 to 12 months	37.1	30	
	From birth to 6 months	42.4	35.7	
	Do not know	0.9	1.3	
First line treatment	Physiotherapy	48.7	53.5	< 0.001
	Surgery	28.8	30.8	
	Cast	28.8	15.8	

Table 4: Relation between causes perception of the clubfoot and the awareness of condition

Clubfoot's perceived causes	Clubfoot's Awareness (%)		P
	Yes	No	
Newborn's sex	2.2	2.1	0.933
Neurological disorders	38.1	40.8	0.486
Mispositioned fetus	38.5	24.6	< 0.001
C-section	5.3	7.7	0.24
Twin pregnancy	11.5	8.8	0.2
Witchraft and Evil eye	2.2	4.8	0.097
Genetic and heredity reasons	56.6	59.2	0.509
Intrauterine deficient amniotic fluid	19	12.5	

Additionally, we discovered that impression of ideal time for beginning clubfoot treatment was substantially correlated with awareness of clubfoot ( $p = 0.001$ ). Those who believed that a kid should receive clubfoot treatment between both the ages of six and twelve months were considerably more likely to be aware of the problem. Similar to this, a significant correlation between knowledge of the disease and belief in the cast's efficacy as a therapeutic tool was discovered ( $p = 0.05$ ). Participants were noticeably more likely to be aware of clubfoot if they thought the cast worked in between 61 and 80 percent of cases. Knowledge of clubfoot and opinions about the efficacy of the physiotherapy and surgery for clubfoot did not significantly correlate. The results of chi-square test of the independence revealed that the respondents with knowledge of the clubfoot had significantly greater access to printed materials, books, websites, and printed media, as well as a lot of information from the relatives and people who had the condition ( $p < 0.001$  single case). Additionally, a very small percentage of the respondents who said we are aware of clubfoot

said they heard about the illness through the current poll or said they knew someone who had the condition. In addition, the analysis revealed that, with the exception of those who believed foetal malposition or a lack of amniotic fluid were also the reasons of clubfoot ( $p < 0.001$  and  $p = 0.020$ , respectively), the apparent causes of the clubfoot didn't significantly differ between the respondents indicate that they were aware of the status and those also who were not (Table 4).

## DISCUSSION

Since prior studies have shown that the public knowledge ranges from the misunderstanding to the complete ignorance,<sup>9</sup> we expected that the general public would have little knowledge about clubfoot.<sup>10</sup> 520 participants in the current study, or 69.7%, had never read of clubfoot syndrome.<sup>11</sup> The participants in current study had similar, or low levels of knowledge of the clubfoot compared to other studies from different nations.<sup>12</sup> In a survey of parents of children with clubfoot conducted by a study,<sup>13</sup> it was discovered that 93.3 percent of parents had no prior knowledge of such condition.

Social media has significantly influenced daily life in Hazara division. Around 25 million people actively use social media, while 92 percent of population uses internet overall.<sup>14</sup> Therefore, it was anticipated that our participants who were aware of the clubfoot would choose social media as the most popular source for learning about the condition (38.4 percent). Additionally, 16.8 percent of respondents discovered about clubfoot from a health website, compared to 19.9 percent of respondents who learned about the ailment from a friend or family member. While we discovered that only 5.7% of our respondents acquired their knowledge of clubfoot via radio or television. These findings suggest that the social media might be a useful tool for a public awareness campaign. Additional research is required to ascertain the efficacy of various campaign of awareness approaches and how will they affect the patient's outcomes. The most widely recognised opinion among orthopaedic specialists based on prior research is that the clubfoot is brought on by the confluence of the environmental and genetic factors.<sup>15,16</sup> The likelihood of having a child with the clubfoot might also increase if one of parents has the ailment.<sup>17,18</sup> Based on the histochemical examination of the muscle samples from the clubfoot sufferers, a neuromuscular origin has been hypothesised. A different explanation for the stopped foetal development has also been put up. Clubfoot has been described as a polygenic multifactorial feature that is inherited, which suggests that the genetic factors play a significant part in development of this ailment.<sup>19</sup> The Astronomical phenomena are thought to be the cause of the clubfoot in some of the societies. Hereditary and genetic illnesses were cited as most common perceived cause by clubfoot in our survey (58.4 percent), followed by the neurological disorders. Accordingly, it is vital that the public obtains the correct information about just aetiology so that the parents could even seek the proper treatment from the orthopaedic specialists. The best initial therapy of the clubfoot usually non-surgical, irrespective of deformity. The most widely utilized method for the correction of clubfoot is Ponseti method (also known as the casting method). This technique gradually corrects the malformation through moderate stretching and casting.<sup>20</sup> Only 19.7% of responders to our poll knew that casting is really the best beginning the clubfoot treatment. About 52.0 & 28.3 percent of the survey participants said that, respectively, surgery, and physiotherapy were initial lines of the treatment. The majority of research subjects conducted by believed that surgery was most frequent form of treatment.

Participants also believed that there were various conventional treatments for treating clubfoot, with warm bandages or oil massages being the most popular. These findings indicate that the majority of the populace had limited knowledge of the cast procedure and may have misunderstood how a cast alone might cure a malformed foot. Because of early intervention and more regular follow-up, patients receive may be improved by public awareness of clubfoot. In order to improve patient outcomes, a

study found that developing hip dysplasia should be identified in newborns as soon as feasible.<sup>2</sup> To reduce the number of cases of late-presenting hip dysplasia, they advised that neonatal screening programmes should include focus on raising parental awareness and not just evaluate the infant. According to the researchers, it will subsequently alleviate the financial strain on the government. So, for clubfoot, we advise using a similar approach. Future research should ideally examine the impact of such interventions on patient outcomes. According to a study, just 14 of the survey's respondents (or 11.89 percent) knew about the Ponseti technique (also known as the casting method), while the other respondents were unaware of the procedure.<sup>2</sup> Additionally, when asked which approach of clubfoot management the Ponseti technique and preferred surgery 57.6 percent of participants chose Ponseti technique, where as 19.3 percent chose the surgery.<sup>3</sup> Our findings revealed that 1.2% of the respondents were unsure about the ideal timing to begin clubfoot treatment. 32.8 percent of participants said it was ideal to begin therapy between 6 and 12 months, while 37.7 percent said it should be given before the age of six months. According to a study, 88.2 percent of respondents believed that the optimum time to start treating clubfoot was right away after delivery, while 11.8% of survey respondents were unsure of the optimal time to start therapy.<sup>5</sup> Due to numerous treatment-related obstacles, there are many cases that are overlooked or present more later than they should. One is the belief among the family that surgery is required to treat the disease. This could increase parents' concerns about using general anaesthesia at such a critical juncture in brain development. Therefore, inaccurate information about the necessity of surgery may cause consultation & treatment to be delayed. Another misconception is that the problem is self-correcting or that a particular boot can help. Many of these falsehoods are disseminated on the social media, which are valuable resource for a lot of parents. In our study, 30.2 percent of participants thought casting helped between 41 and 60 percent of clubfooted kids, compared to 32.7 percent who thought surgery would help 41-60 percent of patients. Reviewing the results of clubfoot surgery and casting (Ponseti) treatment, it was discovered that only 43 percent of surgically treated cases had excellent or good results, compared to 78 percent of Ponseti-treated cases. In our poll, almost a third of participants thought that physiotherapy was successful in treating between 41 and 60 percent of patients, whereas only 25.3% thought that it was successful in treating between 61 and 80 percent of clubfoot patients. These findings suggest that the general public is unaware of how to treat clubfoot. Since early diagnosis and treatment are linked to improved outcomes, it is imperative to raise public knowledge of the disease. National awareness initiatives could boost the percentages of the early treatment and the follow-up visits. The findings of this study can be used to inform strategy, such as the suggestion that a national awareness campaign should employ social media as its main distribution channel, and they can also be used as a starting point for evaluating these kinds of projects. Medical resources, diagnosis, and treatment must improve in developing countries. There are limited resources available on medical education and research in Pakistan: lack of access to medical and health resources to the patients about disease; limited knowledge and trainings, and awareness about disease. The trainings should be conducted to improve the health literacy and how to access the medical resources for patients in Pakistan.<sup>21-26</sup>

**Limitations:** Consideration should be given to the study's shortcomings. First off, the majority of poll respondents came from Hazara division's largest cities. In order to maximise the strength of the results, more data from rural areas or tiny regions is required. Second, it is challenging for us to draw meaningful comparisons because there isn't any comparable research on the Pakistani. Third, it is challenging to generalise the results of this study because of the limited sample size. Therefore, in order to get better findings, we advise doing larger studies with government assistance.

## CONCLUSION

Within the constraints of the present investigation, the findings imply that a barrier to effective interventions and effective management of the clubfoot might be the lack of awareness of public from this condition. Social media has the potential to raise public awareness, and only when used in partnership with trustworthy sources like healthcare professionals.

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