**DOI:** 10.21088/potj.0974.5777.18225.1

Physiotherapy and Occupational Therapy Journal
Volume 18 Number 2, April - June 2025

ORIGINAL ARTICLE

# Knowledge, Attitude and Willingness of Caregivers of Children with Physical Disability to use Orthosis

**Deepika Metange[1], Riddhi Gajra[2], Medha Deo[3]**

HOW TO CITE THIS ARTICLE:

*Deepika Metange, Riddhi Gajra, Medha Deo.* Knowledge, Attitude and Willingness of Caregivers of Children with Physical Disability to use Orthosis. Physiotherapy and Occupational Therapy Journal 2025; 18(2): 113-119.

## ABSTRACT

***Background:*** Rehabilitation aims to optimize function and reduce disability in children with physical impairments. Orthotic devices, such as splints and braces, are essential in preventing deformities and enhancing mobility. However, accessibility and adherence to orthotic use remain challenges, particularly in low-resource settings. Caregivers play a crucial role in ensuring compliance, yet their knowledge, attitudes, and willingness to invest in orthotic interventions are not well-documented in India. This study aimed to assess these factors among caregivers of children with physical disabilities.

***Methods:*** A cross-sectional observational study was conducted among 43 caregivers from the Mumbai Metropolitan Region. Participants were recruited using convenience sampling from physiotherapy clinics and special schools. Data were collected through a self-administered, validated questionnaire assessing knowledge, attitudes, and willingness to use orthotic devices. Descriptive statistics, chi-square tests, and logistic regression analyses were performed to determine associations between variables.

***Results:*** The majority of caregivers were female (72.1%) and aged 31–45 years (60.5%). Most children (81.4%) currently used an orthosis. Knowledge of orthosis was moderate, with only 18.6% being highly familiar. Attitudes varied, with 27.9% reporting positive perceptions and 39.5% remaining neutral. Willingness to invest in orthosis was reported by 46.5% of caregivers, though financial constraints were a major concern (69.8%). Attitude was the strongest predictor of willingness to invest ($p = 0.001$), while financial constraints and education level showed no significant influence.

***Conclusion:*** Caregivers' attitudes significantly impact their willingness to invest in orthotic interventions, highlighting the need for targeted educational initiatives. Addressing misconceptions and financial barriers could enhance compliance and improve rehabilitation outcomes for children with physical disabilities.

AUTHOR'S AFFILIATION:

[1] Associate Professor, Terna Physiotherapy College, Navi Mumbai, Maharashtra 400706, India.
[2] BPT, Terna Physiotherapy College, Navi Mumbai, Maharashtra 400706, India.
[3] Principal, Terna Physiotherapy College, Navi Mumbai, Maharashtra 400706, India.

CORRESPONDING AUTHOR:

**Deepika Metange,** Associate Professor, Department of Physiotherapy, Terna Physiotherapy College Navi Mumbai Maharashtra 400706.
**E-mail:** deepikapuri12@gmail.com

➢ **Received:** 22-02-2025 ➢ **Accepted:** 24-05-2025

**KEYWORDS**

• Orthotic devices, • Caregiver attitudes, • Physical disabilities, • Rehabilitation outcomes, • Willingness to invest.

## INTRODUCTION

Rehabilitation, as defined by the World Health Organization (WHO), encompasses a set of interventions aimed at optimizing function and reducing disability in individuals with health conditions in interaction with their environment.[1] Globally, nearly 250 million children are at risk of suboptimal development, particularly in low and middle-income countries.[2] In India, the prevalence of disabilities among children below six years varies across regions, with reported rates of 8.8 per thousand in Delhi, 6.5 per thousand in Jaipur, and 12.6 per thousand in Lucknow, as per the Indian Council of Medical Research (ICMR) Task Force.[3] Despite these figures, a uniform surveillance system for birth defects remains unavailable.[3]

Orthotic devices including splints and braces play a critical role in the rehabilitation of children with physical disabilities. An orthosis is a customized external device designed to provide support, stabilization, and functional improvement to specific body parts. Orthotic interventions are essential for maintaining joint alignment, preventing deformities, and enhancing mobility. Early intervention, defined as a system of services designed to address developmental delays, incorporates biomechanical principles to realign joints and reduce instability and pain.[2,3] Without timely intervention, children with movement impairments are at risk of developing contractures and permanent shortening of muscles, tendons, or joint structures, which can lead to severe deformities. While surgical intervention may be required in advanced cases, early bracing and stretching exercises can prevent these complications.[4]

Despite the proven benefits of orthotic interventions, their accessibility remains a significant challenge. According to WHO, only 10% of individuals in low and middle-income countries who require assistive devices have access to them. In India, government data from 2021 indicate that 20% of disabled persons experience mobility-related impairments, with the highest prevalence observed in the 10–19-year age group (46.2 lakh individuals).[5] Furthermore, studies highlight the critical role of caregivers in ensuring orthotic compliance and effectiveness.[6] For instance, 16.8% of children with clubfoot are at risk of developing permanent disabilities due to non-adherence to bracing protocols by their caregivers.[7] The willingness, knowledge, and attitudes of caregivers significantly influence rehabilitation outcomes and determine the extent to which children benefit from orthotic interventions.[8]

This study aimed to assess the knowledge, attitudes, and willingness of caregivers of children with physical disabilities to use orthotics. Given the increasing prevalence of childhood disabilities in India, understanding the role of caregivers in rehabilitation is crucial. Caregivers serve as primary facilitators of the rehabilitation process by ensuring adherence to prescribed interventions, including the use of orthotic devices. Their level of awareness and attitude toward orthotic use can significantly impact the effectiveness of treatment and the child's overall functional outcomes.

Investigating caregivers' perceptions will provide insights into the barriers that prevent children from accessing appropriate orthotic devices. Additionally, this study sought to determine whether caregivers' knowledge and attitudes influence their decision to procure and utilize orthotic devices for their children. These findings will help develop targeted interventions aimed at improving caregiver awareness and promoting positive attitudes toward orthotic use, thereby bridging the gap between the need for orthotic interventions and their actual utilization.

## METHODOLOGY

An observational cross-sectional study was conducted to assess the knowledge, attitudes, and willingness of caregivers of children with physical disabilities to use orthotics. The study population comprised caregivers residing within the Mumbai Metropolitan Region, and a convenience sampling technique was employed to recruit 43 participants. The inclusion criteria were primary caregivers of children with physical disabilities who were already using orthosis or who required orthotic

interventions for mobility correction, deformity reduction, or prevention. Caregivers with concerns that could inhibit their participation were excluded from this study.

Approval was obtained from the Institute's Scientific Committee and Institutional Ethics Committee prior to commencing the study. A self-administered validated questionnaire was used for data collection. The questionnaire consisted of 52 structured questions assessing knowledge, attitudes, and willingness regarding orthotic use, and was copyrighted by the authors (L-158002/2024). Participants were recruited from physiotherapy clinics and special schools within the Mumbai Metropolitan Region using convenience sampling. Caregivers were informed of the study objectives, assured of the anonymity of their responses, and given the option to withdraw at any time. Informed consent was obtained before administering the questionnaire, which was circulated using Google Forms. A total of 43 responses were collected.

The collected data were analyzed using Microsoft Excel. Descriptive statistics, including frequencies and percentages, were used to summarize the demographic variables and responses related to knowledge, attitude, and willingness to use orthotic devices.

## RESULTS

Table 1 summarizes the demographic characteristics of caregivers and children. The majority of caregivers were female (72.1%) and most were male (67.4%). The highest proportion of caregivers was aged 31–45 years (60.5%), followed by 18–30 years (30.2%). A significant number of caregivers had secondary (SSC/HSC) education (46.5%), with fewer attaining higher education (graduation or above, 18.6%).

A substantial proportion of caregivers (81.4%) reported that their children currently used an orthosis. The average age of the children was 10.38 years (SD = 3.89), and the majority of families had 4–5 members (64.3%), with 1–2 earning members (95.2%). The income distribution indicated that most families earned less than ₹ 200,000 per year (46.5%), highlighting potential financial constraints.

**Table 1:** Demographic Characteristics of Participants

| Variable | Categories | Frequency (n) | Percentage (%) |
|---|---|---|---|
| **Caregiver Gender** | Male | 12 | 27.9% |
| | Female | 31 | 72.1% |
| **Caregiver Age** | 18–30 years | 13 | 30.2% |
| | 31–45 years | 26 | 60.5% |
| | Above 45 years | 4 | 9.3% |
| **Education Level** | SSC/HSC | 20 | 46.5% |
| | Graduation/Post-Graduation | 8 | 18.6% |
| | School Dropout/ Primary | 15 | 34.9% |
| **Child's Gender** | Male | 29 | 67.4% |
| | Female | 14 | 32.6% |
| **Child using Orthosis** | Yes | 35 | 81.4% |
| | No | 8 | 18.6% |
| **Household Income** | < ₹ 200,000 | 20 | 46.5% |
| | ₹ 200,000–₹ 500,000 | 14 | 32.5% |
| | > ₹ 500,000 | 9 | 21.0% |

## KNOWLEDGE OF ORTHOSIS

The caregivers' awareness and understanding of orthosis varied. While 60.5% of the respondents reported being somewhat or moderately familiar, only 18.6% reported being very familiar (Figure 1). Awareness of different types of orthosis was higher among caregivers with secondary education (SSC/HSC), but did not significantly increase with higher education levels.

### Attitude Toward Orthosis

Caregivers' attitudes toward orthosis were assessed using a 5-point scale. The most common rating was 3 (neutral, 39.5%), followed by 4 (positive, 27.9%), and only 6 respondents (14%) rated their attitude as 5 (highly positive). Additionally, comfort levels varied, with 46.5% of caregivers consistently comforstable with their child using orthosis at home, while 34.9% expressed discomfort in social settings.

### Willingness to Invest in Orthosis

Regarding willingness to invest in orthosis, 46.5% of caregivers were willing, while 37.2% were somewhat willing. However, financial constraints emerged as a key factor, with 69.8% of caregivers reporting financial difficulties as barriers.

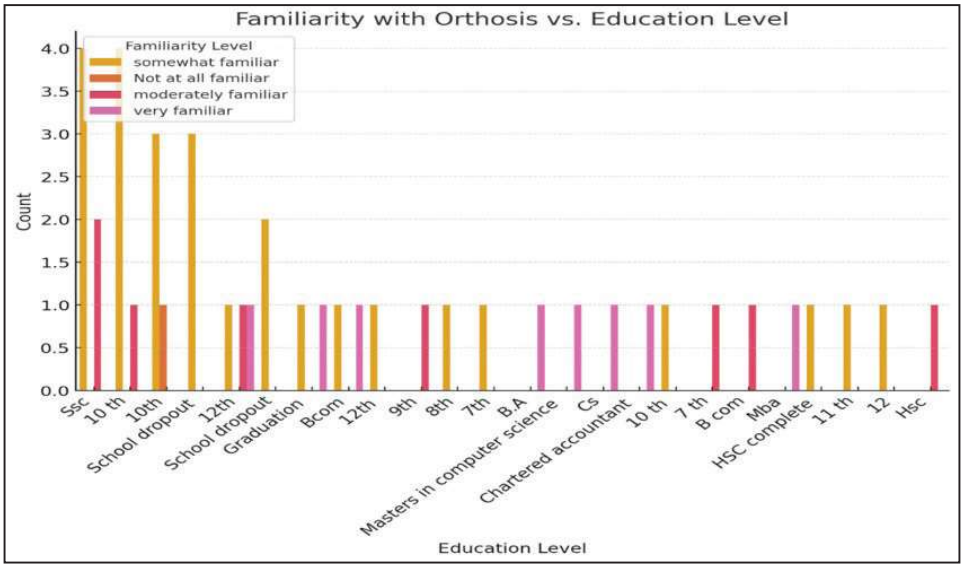



**Figure 1:** Familiarity with the Term Orthosis

**Table 2:** Willingness to Invest in Orthosis

| Willingness Level | Frequency (n) | Percentage (%) |
|---|---|---|
| Willing | 20 | 46.5% |
| Somewhat Willing | 16 | 37.2% |
| Undecided | 4 | 9.3% |
| Somewhat Not Willing | 3 | 7.0% |

## Association Between Knowledge and Education Level

A Chi-Square test of independence was conducted to examine the association between education level and familiarity with the orthosis. The test was not statistically significant ($\chi^2 = 65.22$, $p = 0.6068$), indicating that higher education levels did not significantly impact caregivers' familiarity with orthosis.

## Influence of Attitude on Willingness to Invest

A Chi-Square test examining the relationship between attitude and willingness to invest revealed a highly significant association ($\chi^2 = 43.70$, $p < 0.0001$). Caregivers with higher attitude scores (4 or 5) were significantly more likely to invest, supporting the hypothesis that attitudes strongly predict willingness (Figure 2).

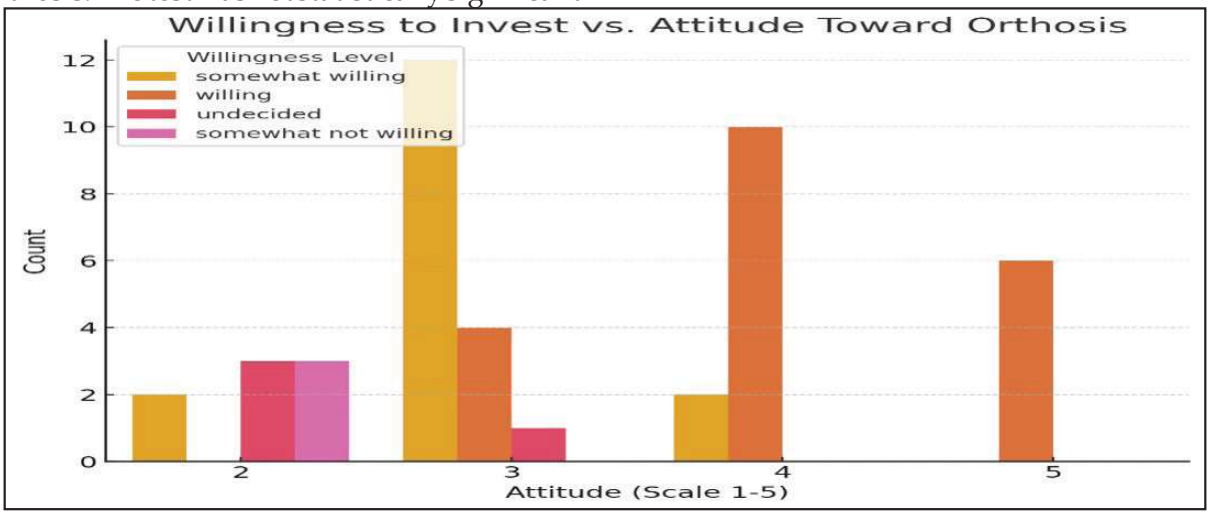


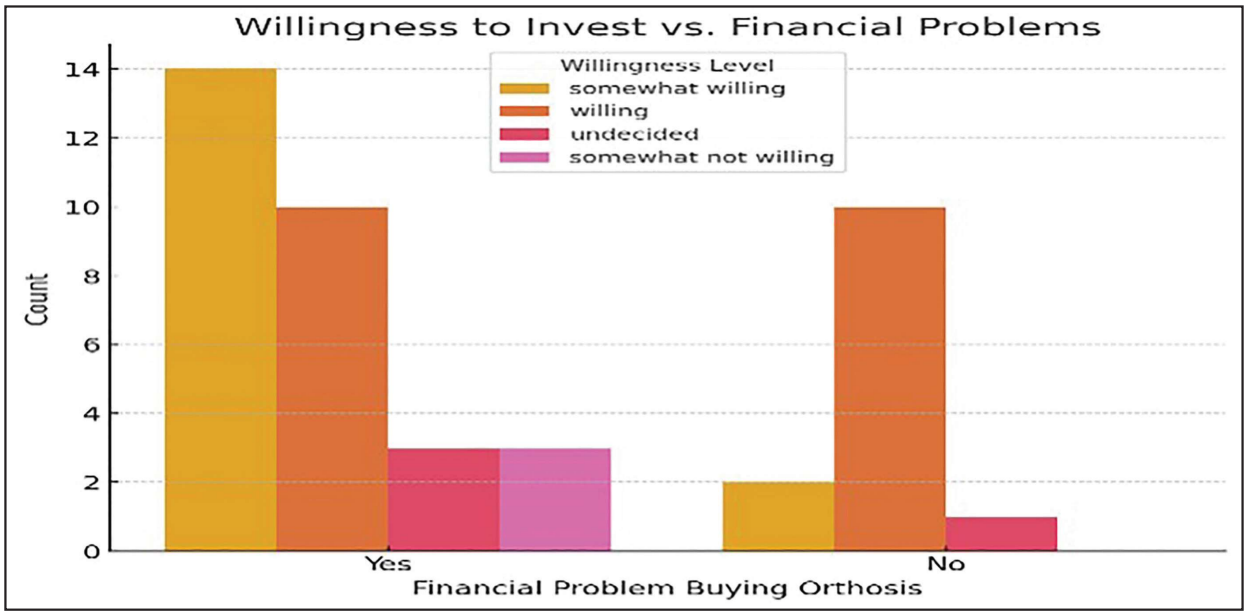

**Figure 2:** Willingness to Invest vs. Attitude Score

### Impact of Financial Constraints on Willingness

A Chi-Square test assessing the association between financial difficulties and willingness to invest showed a marginally significant effect ($\chi^2 = 7.44$, $p = 0.0591$). While caregivers facing financial problems were less willing to invest, the relationship was not strong enough to reach statistical significance at $p < 0.05$.

**Table 3. Financial Constraints vs. Willingness to Invest**

| Financial Problem | Willing | Somewhat Willing | Undecided | Not Willing |
|---|---|---|---|---|
| Yes | 10 | 14 | 3 | 3 |
| No | 10 | 2 | 1 | 0 |




### Predictors of Willingness: Logistic Regression Analysis

A logistic regression model was used to identify the factors predicting the willingness to invest. The model included attitude scores, financial problems, and educational level as predictors.

**Table 4:** Logistic Regression Results

| Predictor | Coefficient (β) | p-value | Interpretation |
|---|---|---|---|
| **Attitude Score** | **+3.04** | **0.001** | **Significant predictor** (higher attitude = higher willingness) |
| **Financial Problems** | **-0.77** | **0.49** | Not significant |
| **Education Level** | **+0.044** | **0.46** | Not significant |

Attitude was the strongest predictor of willingness to participate ($p = 0.001$).

Financial constraints and educational level were not statistically significant predictors.

## DISCUSSION

This study aimed to evaluate caregivers' comprehension of and perspectives on orthotic devices in the rehabilitation of children with physical disabilities. Among the 43 caregivers surveyed, the majority were female (72%), and predominantly within the 31–45 age range. The findings provide valuable insights into caregivers' knowledge, attitudes, and willingness regarding orthotic use.

Caregivers have demonstrated varying levels of knowledge regarding orthotic devices. A study by Zaino *et al.*[9] revealed that caregivers desired more education on orthosis, aligning with our findings, where 60% of the participants were only somewhat familiar with orthosis. Furthermore, nearly half of the participants misclassified wheelchairs as orthotic devices, underscoring the need for targeted educational programs to clarify the distinction between mobility aids and orthotic interventions. Studies by Grzybowski *et al.*[10] and Chen *et al.*[11] highlighted similar

knowledge gaps, with our findings indicating that caregivers often associated orthosis prescriptions with physiotherapists rather than orthotists or orthopedic specialists. This misconception emphasizes the importance of increasing awareness regarding the multidisciplinary approach to orthotic provision.

Regarding attitudes, our findings were comparable to those of Chen *et al*.[11], who reported caregiver concerns about discomfort and fit-related issues. In our study, 60% of caregivers acknowledged the benefits of orthosis, 30% were neutral, and 10% disagreed. Concerns regarding skin irritation, tight straps, and discomfort were prevalent, contributing to mixed satisfaction levels. Studies by Grzybowski *et al*.[10] and Yasukawa *et al*.[12] further support these findings, suggesting that, while caregivers recognize the role of orthosis in rehabilitation, they also experience concerns regarding their child's comfort and social acceptance.

Financial constraints have emerged as a significant factor influencing caregivers' willingness to invest in orthotic devices. Schulz[13] found that cost was the primary barrier to purchasing orthosis, a trend that resonated in our study, where willingness to invest was often hindered by financial limitations. However, the impact of financial constraints is not statistically significant. Education level also did not significantly influence caregivers' familiarity with orthotic devices or their willingness to invest, suggesting that other factors such as perceived benefits and attitudes play a more crucial role.

Overall, our findings highlight the need for targeted educational interventions to improve the caregivers' understanding of orthotic interventions. By addressing knowledge gaps, misconceptions, and financial barriers, health care professionals can empower caregivers to actively support their children's rehabilitation, ultimately optimizing functional outcomes and quality of life.

## CONCLUSION

This study emphasizes the critical role of caregivers in the rehabilitation of children with physical disabilities and highlights the impact of their knowledge, attitudes, and willingness toward orthotic interventions. A positive attitude toward orthosis emerged as the strongest predictor of willingness to invest, whereas financial constraints and educational level had no significant influence. These findings emphasize the need for targeted educational initiatives to enhance caregivers' understanding and perceptions of orthosis. Addressing misconceptions, improving awareness of orthotic benefits, and ensuring access to support services are essential for optimizing rehabilitation outcomes and promoting equitable access to orthotic care.

## REFERENCES


1. World Health Organization. Rehabilitation [Internet]. World Rehabilitation Alliance; [cited 2023 Jan 5]. Available from: https://www.who.int/rehabilitation
2. Olusanya B.O., Davis A.C., Wertlieb D., *et al*. Developmental disabilities among children younger than 5 years in 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet Glob Health. 2018; 6(10): e1100-21.
3. Ganguly N.K., Satyanarayana K., Srivastava V.K., Kant L., Sah Bela M.V. Prevention of disability in children. Int Rehabil Rev. 1979; 3:1-5.
4. Physiopedia contributors. Introduction to spinal orthosis [Internet]. Physiopedia; 2021 Jul 29 [cited 2023 Jan 5]. Available from: https://www.physio-pedia.com/Introduction_to_Spinal_Orthosis
5. Mishra A.K., Ojha A., Kumar S., Kanaujia A., Dwivedi A., Dasgupta S., *et al*. Persons with Disabilities (Divyangjan) in India - A Statistical Profile: 2021. Govt. of India; 2021.
6. Roy L., *et al*. Splints and orthosis. 2021. p. 15-98.
7. Rashtriya Bal Swasthya Karyakram (RBSK). National Health Mission [Internet]. [cited 2023 Jan 5]. Available from: https://www.nhm.gov.in
8. Iqbal M.S., Dubey R., Thakur K., Katiyar S., Prasad M. Assessment of awareness and barriers to clubfoot treatment in the Indian scenario. J Family Med Prim Care. 2021; 10(11): 4229-35. doi: 10.4103/jfmpc.jfmpc_2606_20. PMID: 35136794; PMCID: PMC8797066.
9. Zaino N.L., Westcott McCoy K., Schwartz M.H., *et al*. "That's frustrating": Perceptions of ankle foot orthosis provision, use, and needs among people with cerebral palsy and caregivers. ProsthetOrthot Int. 2023; 47(2): 147-54. doi: 10.1097/PXR.0000000000000165.

**10.** Grzybowski G., Bliven E., Wu L., *et al*. Caregiver experiences using orthotic treatment options for developmental dysplasia of the hip in children. J PediatrOrthop. 2023;43(2):105-10.

**11.** Chen N., Zafani M.D., Baleotti L.R., Ireno J.M. The use of orthosis in children with cerebral palsy: perception of caregivers. Cad Bras Ter Ocup. 2019; 27(1). doi: 10.4322/2526-8910.ctoAO1612.

**12.** Yasukawa Y., Malas B., Martin P. Caregiver satisfaction for orthotic management of a severely involved child with cerebral palsy seen at age 7 years and 19 years. J ProsthetOrthot. 2016;28(2):78-82. doi: 10.1097/JPO.0000000000000090.

**13.** Schulz R, Beach SR, Czaja SJ, Martire LM. Caregivers' willingness to pay for technologies to support caregiving. Gerontologist. 2016;56(5):817-29. doi: 10.1093/geront/gnv033.