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Research Article

The Influence of Cultural Beliefs and Practices on the Acceptance and Use of Prosthetic Limbs: A Cross-Sectional Study Among Amputees in Nigeria

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Abstract

Despite advances in prosthetic technology, rejection and discontinuation rates remain substantial. While economic and clinical factors contribute to this trend, socio-cultural influences such as beliefs, values, and stigma may significantly shape perceptions and acceptance of prosthetic limbs. This study aimed to examine the influence of cultural beliefs and practices on the acceptance and use of prosthetic limbs among individuals with limb loss. A descriptive cross-sectional study was conducted at the Leprosy Mission Nigeria Orthopaedic Centre, Niger State. A total number of three hundred and eighty-four participants, including prosthetic users and rehabilitation professionals, were selected using a proportionate stratified random sampling. Data were collected using a structured questionnaire comprising closed and open-ended items. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative responses were analyzed using content analysis. The findings showed that majority of respondents (52.4%) did not perceive cultural beliefs as a major determinant of prosthetic acceptance, although 40.0% acknowledged some influence. Specific culturally rooted beliefs identified included perceptions that body parts should not be replaced (6.0%), prosthetic limbs alter human identity (5.5%), and fear of reincarnation with limb loss (3.7%). Notably, cultural and social stigma emerged as a dominant factor, with 87.5% of respondents indicating it significantly affects prosthetic acceptance and use. Additionally, 87.0% agreed that prosthetic use positively impacts body image and self-esteem. The study concludes that while traditional cultural beliefs may have limited influence on prosthetic acceptance in this population, social stigma remains a critical barrier to optimal use. Interventions addressing societal attitudes, alongside culturally responsive prosthetic design and rehabilitation strategies, are essential to improve acceptance and long-term utilization.

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Keywords

Limb Loss, Cultural Beliefs, Social Stigma, Prosthetic Acceptance, Disability Perception, Rehabilitation

1. Introduction

1.1. Background of the Study

Prosthetic limbs play a critical role in the rehabilitation of individuals with limb loss, by restoring mobility, independence, and social participation. Advances in prosthetic technology have led to the development of devices that are increasingly functional, lightweight, and sophisticated. However, despite these improvements, rates of prosthetic rejection and abandonment remain considerable, suggesting that technological progress alone is insufficient to ensure acceptance and sustained use [1, 2].

Beyond clinical and economic factors, socio-cultural influences play an important role in shaping attitudes towards prosthetic limbs. Cultural beliefs, values, and practices can affect how individuals perceive disability, body image, and assistive technologies. In some contexts, limb loss may be associated with stigma, spiritual interpretations, or social exclusion, which can influence willingness to adopt prosthetic devices [3, 4]. In addition, societal attitudes and community perceptions may affect how individuals integrate prosthetic use into their daily lives [5, 6].

Qualitative studies indicate that prosthetic satisfaction is multidimensional, extending beyond comfort and functional performance. Factors such as social support, community attitudes, and environmental context significantly influence prosthesis use and acceptance [1, 6]. These findings highlight the importance of aligning prosthetic interventions with users' social environments and cultural lifestyles.

For example, a study in Kenya showed that hope, motivation, and societal perceptions significantly affected prosthetic use and satisfaction [6]. Similarly, in Sweden, lower-limb prosthesis users reported that access to information, social support, and the challenges of adapting to everyday activities significantly influenced their rehabilitation experiences [1, 2, 7]. This highlighting the broader influence of social and environmental factors on prosthetic use [1, 7, 8].

Cultural and contextual factors may influence functional and aesthetic expectations of prosthetic devices, including compatibility with lifestyle and social practices. Prostheses that do not align with these contextual factors may limit user satisfaction and acceptance. Although prosthetic research has traditionally prioritized biomechanical performance and cost, increasing evidence highlights the importance of psychosocial and contextual determinants of prosthesis use and satisfaction [3, 9, 10].

In Nigeria and similar settings, cultural beliefs and social perceptions continue to shape experiences of disability and rehabilitation. However, empirical evidence examining their influence on prosthetic acceptance remains limited. This study therefore seeks to explore how cultural beliefs and practices affect the acceptance and use of prosthetic limbs, with the aim of informing more culturally responsive rehabilitation strategies.

1.2. Specific Objectives

By exploring the perceptions of prosthetic users and rehabilitation professionals, the study aims to:

1) Identify the role of cultural beliefs on acceptance and use of prosthesis.
2) Evaluate specific cultural beliefs associated with prosthetic limb rejection.
3) Determine socio-cultural factors influencing prosthetic limb acceptance and use across cultural divide,
4) Evaluate the impact of prosthetic limb use on body image and self-esteem among users.

2. Materials and Methods

2.1. Study Design

This study employed a descriptive cross-sectional design to examine the influence of cultural beliefs and practices on prosthetic limb acceptance and use.

2.2. Study Area

The study was conducted at the Leprosy Mission Nigeria Orthopaedic Centre, located in Niger State, Nigeria. The Centre provides prosthetic and orthotic services to patients from various cultural and socio-economic backgrounds.

2.3. Study Population

The study population comprised individuals with limb loss who had previously used, were currently using, or had at any time declined the use of prosthetic limbs. It also included rehabilitation professionals, and individuals involved in influencing the provision, accessibility, and social acceptance of prosthetic limb services.

2.4. Eligibility Criteria

2.4.1. Inclusion Criteria

Participants included in the study were individuals with limb loss (past or current prosthetic users or rejecters), rehabilitation professionals, adults aged eighteen years and above, and those who provided informed consent.

2.4.2. Exclusion Criteria

Individuals who are not with limb loss, not worked directly with prosthetic limb users, are below the defined age range, unable to communicate effectively and are unable to provide informed consent were excluded from the study.

2.5. Sample Size and Sampling Technique

A total of three hundred and eighty-four participants were determined using the Cochran's formula.

Participants were selected using a proportionate stratified random sampling technique to ensure representativeness of the study population.

2.6. Data Collection Methods

Data were collected using a structured questionnaire comprising both open-ended and close- ended questions. The instrument assessed socio-demographic characteristics, cultural beliefs and practices, and perspectives of rehabilitation professionals. Responses to the closed- ended items were measured using a 5-point Likert scale, which was used to evaluate participants' attitudes, perceptions, and satisfaction regarding prosthetic limbs.

2.7. Validity of the Instrument

The questionnaire was reviewed by experts in prosthetics and rehabilitation to ensure content validity. Necessary modifications were made to improve clarity and relevance.

2.8. Reliability of the Instrument

The reliability of the instrument was established through a pilot study conducted among respondents with similar characteristics to the study population. Feedback from the pretest informed revisions to improve clarity, consistency, and internal reliability.

2.9. Data Analysis

Quantitative data was analyzed using descriptive statistics, including frequencies and percentages, to summarize and present the data. Inferential statistics, especially the chi-square test, were used to examine the association between variables and to determine statistical significance. All analysis were conducted using the Statistical Package for the Social Sciences (SPSS), with results presented in contingency tables.

Qualitative data obtained from open- ended questions were analyzed using content analysis. Responses were systematically coded and grouped into categories and themes to identify recurring patterns related to cultural beliefs and prosthetic acceptance.

2.10. Ethical Consideration

The ethical approval for this research study was obtained from the school of health ethics committee of Federal University of Technology Owerri (FUTO).

Informed consent was obtained from all participants before data collection. Participation was voluntary, and respondents were assured of confidentiality, anonymity, and the right to withdraw from the study at any stage without penalty. All procedures were conducted in accordance with accepted ethical principles for research involving human participants.

3. Results

Table 1 represents the socio-demographic characteristics of the respondents.

A total of three hundred and eighty-four participants took part in the study, comprising prosthetic users and rehabilitation professionals. Participants varied in tribe, age, gender, types of amputation, causes of amputation, religion, marital status, level of education, years of amputation, and years of prosthetic use.

As shown in Table 1, A greater proportion of participants were male (175, 45 6%), and most were between the ages of 38 and 48 years (122, 31 8%). The majority of the respondents were from Hausa tribe (81, 21 1%), Yoruba tribe (65, 16 9%) and Fulani tribe (45, 11 7%) while the remaining tribes were grouped into "others" (193, 50·2%) due to smaller frequencies. Islam is the major religion (196, 50 9%), followed by Christianity (158, 41 0%). The most common level of amputation was Transtibial/Below Knee (234, 60 8%), and road traffic accident, a predominant cause of amputation (149, 38 8%). A bulk of the participants were married (250, 65 1%), and with no formal education (133, 34 6%). The most participants (123, 32 0%) agreed they have been amputated for one to five years, just as (255, 66 4%) also accepted having used prosthetic limbs for the same number of years.

Table 1. *Socio-demographic and clinical characteristics of participants.*

	Category	Frequency	Percentage%
Gender	Male	175	45 6
Gender	Female	171	44 5
Age group (years)	28-38	60	15 6
Age group (years)	38-48	122	31 8
Age group (years)	58-68	84	21 9
Tribe	Hausa	81	21 1
Tribe	Yoruba	65	16 9
Tribe	Fulani	45	11 7
Tribe	Others (17 tribes)	193	50 2
Religion	Christianity	158	41 0
Religion	Islam	196	50 9
Level amputation	Above knee	118	30 6
Level of amputation	Below knee	234	60 8
Cause of amputation	Road traffic accident	149	38 8
Cause of amputation	Diabetes	92	24

Table 2 presents responses on the influence of prosthetic acceptance and use.

From the table above, a majority of respondents (201, 52 4%) do not see cultural beliefs as important determinants of prosthetic limb acceptance and use, while (154, 40 0%) agree that cultural beliefs affect prosthetic limb acceptance. Only a small proportion of the participants (29, 7 6%) showed neutrality regarding the question.

Table 2. *Influence of cultural beliefs on prosthetic acceptance and use.*

	Category	Frequency	Percentage%
Response	Agree	154	40 0
Response	Disagree	201	52 4
Response	Neutral	29	7 6
Response	Total	384	100 0

Table 3 shows responses on the cultural beliefs associated with prosthetic limb rejection.

From all indications, majority of the participants (218, 56 7%) admitted that there are no such cultural beliefs that prohibit the acceptance and use of prosthetic limbs in their individual cultures. However, beliefs associated with prosthetic limb rejection included the view that body parts are made by God and should not be replaced (23, 6 0%), the perception that prosthetic limbs are artificial devices that alter human nature (21, 5 5%), and fear of reincarnation with limb loss (14, 3 7%). Nevertheless, (108, 28 2%) of participants did not respond to the question.

Table 3. *Cultural beliefs associated with prosthetic limb rejection.*

	Frequency	Percentage%
Not applicable in my culture	218	56 7
Body parts are made by God and should not be removed or replaced	23	6 0
Prosthetic limbs are artificial and alters humanity	21	5 5
Fear of reincarnation with limb loss or deformity	14	3 7
No response	108	28 2
Total	384	100 0

Table 4 addresses the influence of cultural and social stigma on prosthetic limb acceptance and use.

From the table, a majority of respondents (336, 87 5%) reported that cultural and social stigma influenced prosthetic limb acceptance and continued use. Very small proportion of the respondents disagreed (17, 4 4%), were neutral (21, 5 5%) and that showed no response (10, 2 6%).

Table 4. *The influence of cultural and social stigma on prosthetic limb acceptance and use.*

	Category	Frequency	Percentage%
Response	Agree	336	87 5
Response	Disagree	17	4 4
Response	Neutral	21	5 5
Response	No Response	10	2 6
Response	Total	384	100 0

Table 5 summarizes responses on the impact of prosthetic limb uses on body image and self-esteem.

As shown in the table, the results suggest that prosthetic limb use is perceived to have a significant positive effect on body image and self-esteem, with most respondents (334, 87 0%) in agreement. Only a minority disagreed (18, 4 7%), (17, 4 4%) were neutral, and (15, 3 9%) did not respond.

Table 5. *The impact of prosthetic limb uses on body image and self-esteem.*

	Category	Frequency	Percentage%
Response	Agree	334	87 0
Response	Disagree	18	4 7
Response	Neutral	17	4 4
Response	No Response	15	3 9
Response	Total	384	100 0

4. Discussion

4.1 Interpretation of findings

This section interprets the findings of the study in relation to the study objectives and existing understanding of prosthetic acceptance and use.

4.2 Cultural Beliefs Influencing Prosthetic Acceptance and Use

To Identify the Role of Cultural Belief in Acceptance and Use of Prosthesis, the findings revealed that the majority of respondents (52 ·4%) disagreed that cultural beliefs play a role in the acceptance and use of prosthetic limbs, while 40% agreed and 7 ·6% remained neutral. This suggests that within the study population, cultural beliefs were not identified as primary determinants of prosthetic acceptance. This aligns with evidence that prosthetic satisfaction and adaptation are influenced by multiple interacting factors, including functional ability, rehabilitation support, access to information, and environmental demands. rather than a single determinant [11, 12]. However, the proportion of respondents acknowledging cultural influence remains substantial, suggesting that such beliefs should not be ignored. Previous qualitative studies have demonstrated that perceptions of disability, social context, community attitudes and support networks can significantly influence prosthetic use, adaptation, and user experiences, particularly within specific cultural and social contexts or sub-groups [1, 5, 6].

Further evaluation of specific prohibitive beliefs revealed that the majority (56 ·7%) reported that such beliefs were not applicable in their culture, reinforcing the earlier finding that cultural barriers may not be the dominant factor influencing prosthetic use within this population. This aligns with evidence suggesting that prosthetic utilization is influenced by multiple interacting factors, including access to services, affordability, functional outcomes, psychosocial considerations, and cultural beliefs. Although cultural influences may not always emerge as the primary determinants, they remain important within specific social and cultural contexts [1-3].

Nevertheless, a minority of respondents endorsed specific prohibitive beliefs. These findings are consistent with qualitative evidence indicating that socio-cultural perceptions may influence prosthetic acceptance among specific subgroups rather than uniformly across populations [5, 6, 12].

The notable proportion of non-response may suggest that beliefs related to culture and prosthetic use are complex and not always readily articulated by respondents [6, 11, 12].

Overall, while cultural beliefs may not be the primary determinant, they remain relevant in specific contexts and should not be entirely dismissed. This underscores the importance of culturally responsive prosthetic service delivery and patient-centered care [1, 10].

Furthermore, in determining the common socio-cultural factors influencing prosthetic limb acceptance and use, the findings revealed that a large majority of respondents (87 ·5%) agreed that cultural and social stigma affects prosthetic acceptance and use, while only a small minority (4 ·4%) disagreed. This overwhelming agreement suggests that stigma remains a major socio-cultural factor shaping how prosthetic devices are perceived and utilized. Beyond functionality, cost, accessibility, and comfort, social acceptance and fear of discrimination significantly influence user preferences and willingness to wear prosthetic limbs openly [3, 5, 6].

This finding is consistent with previous studies demonstrating that stigma and community perceptions play a critical role in prosthetic use and social participation [13]. Similarly, research in Ghana reported direct experiences of negative social feedback and discrimination that interfered with prosthetic use and integration into daily life [14].

Evidence also shows that broader societal attitudes towards visible disability significantly influence user adjustment and acceptance [5].

The findings further suggest that individuals may prefer prosthetic designs that minimize visibility or appear more natural in order to avoid negative social labeling or unwanted attention [1, 6].

This reinforces the notion that acceptance is not solely determined by mechanical performance but by how well the device aligns with social expectations and cultural norms regarding bodily appearance [1, 3, 6]. While advances in prosthetic technology, such as bionic devices, have been shown to improve self-perception and user competence, their impact on stigma remains complex. Some studies report enhanced confidence and identity, whereas others highlight the persistence of stigma alongside feelings of empowerment [6, 10, 15].

Overall, these findings underscore the importance of addressing stigma in prosthetic design and rehabilitation. Prosthetic services should incorporate culturally responsive and user-centered approaches that consider aesthetic preferences, social expectations, and the lived experiences of users to enhance acceptance and long-term utilization [6, 7]. In addition, public education and community-based interventions are essential to reduce stigma and improve societal acceptance of prosthetic users [3, 5, 10].

Finally, in evaluating the impact of prosthetic limb use on body image and self-esteem among users, the findings of this study indicate that prosthetic use has a substantial positive effect, with a large majority of respondents (87 ·0%) reporting improved body image and self-esteem. This aligns with emerging evidence demonstrating that prosthetic use can enhance an individual's sense of identity, confidence, and psychological well-being [16, 17]. Prosthetic limbs not only restore physical function but also contribute to improved self-perception by enabling users to feel more integrated, confident, and engaged within their social environments [4, 16, 18]. Qualitative studies further highlight that prosthetic use supports a sense of normalcy, belonging, and social participation, which are critical components of self-esteem [8, 20].

The positive influence of prosthetic use on body image is particularly important, as body image dissatisfaction has been associated with reduced participation and poorer psychosocial outcomes among individuals with limb loss [4, 17-19]. When prosthetic devices are perceived as extensions of the body rather than external attachments, users are more likely to report enhanced self-esteem and improved social engagement [16-18]. This reflects the broader understanding that prosthetic devices are not solely functional tools but also carry symbolic meaning in shaping identity and social roles [8].

However, A small proportion of respondents disagreed (4 ·7%) or were neutral (4 ·4%), suggesting variability in psychosocial outcomes. Such differences may be influenced by factors including prosthetic fit, comfort, usability, and individual coping mechanisms, as well as broader psychosocial and contextual influences [1, 4, 8]. Some users may continue to experience difficulty integrating the prosthetic limb into their self-concept, particularly when functional or aesthetic expectations are unmet.

Overall, these findings underscore the multifaceted impact of prosthetic limb use. Beyond restoring mobility, prosthetic devices have the potential to positively influence body image and self-esteem, key components of holistic rehabilitation. Recognizing and addressing these psychosocial dimensions is essential for improving outcomes and supporting user-centered prosthetic care [1, 4, 8, 16].

5. Conclusion

This study examined the influence of cultural beliefs and practices on the acceptance and use of prosthetic limbs. The findings indicate that cultural beliefs are not widely perceived as major barriers to prosthetic acceptance. However, a minority of respondents reported culturally rooted perceptions, including beliefs about divine creation of body parts, that prosthetic limbs alter human identity, and fear of reincarnation with limb loss or deformity.

Notably, cultural and social stigma emerged as a significant factor influencing prosthetic acceptance and use. This suggest that while traditional cultural prohibitions may be declining, broader societal attitudes toward disability continue to shape prosthetic utilization.

The study is limited by its cross-sectional design, reliance on self-reported data, and single study setting. Addressing social stigma and promoting culturally responsive rehabilitation strategies are essential to improving prosthetic acceptance and long-term use.

Abbreviations

BMC	BioMed Central
FUTO	Federal University of Technology, Owerri
SPSS	Statistical Package for the Social Sciences

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Author Contributions

Frank Chinemeze Obiezu: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Writing – original draft

Nwadinigwe Cajetan: Conceptualization, Formal Analysis, Supervision, Validation, Writing – review & editing

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Conflict of Interest

The authors declare no conflicts of interest.

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