



Original Article

Community perception and acceptance of patients with prosthetic devices after disabilities in Saudi Arabia

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ABSTRACT

Objectives: It is well-known that prostheses help people with special needs to adapt and have a better quality of life; however, the community's perception and acceptance of patients with prosthetic devices have not been fully assessed. This study aimed to measure the community's perception and acceptance of patients with prostheses in Riyadh, Saudi Arabia.**Methods:** A cross-sectional study was conducted using a self-developed questionnaire. The questionnaire included 20 questions to assess three main domains; marriage, employment, and friendship. The questionnaire was distributed for around 4 months to achieve the required sample size. The assessment of community acceptance of people with prostheses was measured by the Prosthesis Acceptance Assessment Test, which is 20 items on a five-point Likert scale. A score of 60 and above indicate a high acceptance rate for a participant.**Results:** A total of 526 participants responded to the questionnaire, of which only 68 (12.9%) participants knew someone with a prosthesis. Most participants were female ($n = 292$, 55.5%) and bachelor's degree holders ($n = 90$, 26.1%). The acceptance rate was higher in females ($n = 78$, 26.7%) than males ($n = 58$, 24.8%), with most participants ($n = 390$, 74.1%) not accepting people with prostheses.**Conclusion:** Most participants in the study were not socially accepting people with a disability using prostheses. Reasons were not explored as there was no age, gender, or educational status differences that may have potentially explained the low acceptance rate.**Keywords:** Amputation, Community acceptance, Disability, Prosthesis, Rehabilitation

INTRODUCTION

Prostheses are artificial devices that enable people who suffer the loss of a body part due to trauma, disease (i.e., gangrene), or congenital conditions to function as normal humans and cope with life. The first prosthesis in history was a toe, dating back to 950–710 B.C.E.^[1] There are two general types of prostheses: Cosmetic and mechanical. The cosmetic prosthesis does not restore the organ's function but improves the patient's appearance after losing a body part. This kind of prosthesis does not restore function. The mechanical prosthesis is used to restore the normal

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function of a missing body part.^[2] Disability is defined as “physical or mental impairment that substantially limits one or more major life activities of such individual.”^[3] Therefore, patients with prosthetic devices fall under this category. These patients suffer physically and psychologically from the loss of normal function. The psychological effects may be aggravated by positive or negative community acceptance. Prostheses improve the function and the cosmetic appearance and may improve patients’ social acceptance in the community. However, some people do not change their perspectives and continue to view them as people with disability, which leads to discrimination in different settings, such as workplaces and social events. Furthermore, they may not be accepted as potential spouses.

One study projected that the number of people living with limb loss will more than double by the year 2050 to approximately 3.6 million people.^[4] A study on the inclusion of people with disability in the labor market in Brazil concluded that despite government-issued bylaws, people with disabilities still face challenges such as preconceived ideas, discrimination, and lack of access to the labor market.^[5]

A different study stated that prosthetic upper and lower limbs had changed greatly over the past years. The rehabilitation of amputees has greatly benefited from the advanced technology, leading to a more independent life for patients with prostheses.^[6] Studies revealed that 89% of amputees returned to work after an amputation.^[7] Furthermore, job re-integration was successful in 79% of the amputees. Amputees who had to stop working experienced a decline in health compared to those who continued working.^[8] Because there is no relevant data regarding the community’s attitude toward patients with limb prostheses, this study aimed to explore the acceptance of this category to promote better awareness and supporting data.

We assessed the community’s perception and acceptance of people with prostheses based on different variables in Riyadh, Saudi Arabia. This study aimed to measure the prevalence of community acceptance of patients with prosthetic devices and compared the difference in acceptance based on demographic characteristics, including gender, education level, and age.

MATERIALS AND METHODS

This cross-sectional study was conducted using an online questionnaire through Google Forms to gather data from the online community in Saudi Arabia. Those participants were questioned using an online questionnaire, which was distributed on social media to facilitate data collection for the duration of 4 months. Furthermore, the online questionnaire was chosen as a medium to obtain participants from different backgrounds and levels of education.

The inclusion criteria were Saudi men and women above the age of 18 living in Riyadh. Participants who had previous amputations were excluded from the study.

Of the 2.8 million population of Riyadh who are above 18 years, assuming there are no previous studies, the prevalence rate of acceptance is 50%. The representative sample of the population is 384, as calculated using the SurveyMonkey sample size calculator. The sample size was increased to 526 after data collection. This study used a non-probability convenience sample for participants who were willing to participate on their own and meet the inclusion and exclusion criteria. The research team used a self-developed questionnaire distributed through social media, using an online survey targeting adults above 18 years of age. The questionnaire consisted of 20 questions to assess three dimensions of community acceptance of people with prostheses in marriage, friendship, and as an employee. The questionnaire was translated forward and backward by two different translators who were not aware of the aim of the study. First, a forward translation into Arabic was carried out by a translator from a specialized research center. Then, another translator performed the backward translation to compare it with the original version. Subsequently, both translated versions were submitted to a committee consisting of translators and research members. Both versions were compared and a prefinal version was obtained by mutual consensus. The prefinal version was distributed to ten experts in Medical Education. Responses and comments from them were taken into consideration, and a final version was made without any major discrepancies. The assessment of community acceptance of people with prostheses was measured by the Prosthesis Acceptance Assessment Test, which is 20 items on a five-point Likert scale. The total score was 80, yielding a potential score of zero to four. The participant was considered accepting if the score was 60 and above, indicating high acceptance.

Statistical methods

All data collected from Excel were appropriately coded and transferred to SPSS. The *t*-test was used to compare two

Table 1: Frequency and percentage of people who knew someone with a prosthesis.

If you know anyone with prosthesis, could you describe your relationship with them? (Friend, Family, colleague, etc.)		
	Frequency	Percentage
None	459	87.3
Family	36	6.8
Friend	15	2.9
Colleague	13	2.5
Public figure	3	0.6
Total	526	100.0

Table 2: Acceptance results among males and females.

Gender		Acceptance results		Total	Fisher's exact test	P-value
		Not accepting	Accepting			
Male	n (%)	176 (75.2%)	58 (24.8%)	234	0.2514	0.616
Female	n (%)	214 (73.3%)	78 (26.7%)	292		
Total	n (%)	390 (74.1%)	136 (25.9%)	526		

Table 3: Acceptance score among males and females.

Gender	Acceptance score		t-test	P-value
	Male	Female		
n (%)	234 (44.5%)	292 (55.5%)	-1.688	0.092
Mean (±SD)	51.32 (±11.618)	53.02 (±11.374)		

means. An ANOVA test was used to compare the education level and the acceptance score. Linear regression was used for continuous variables such as age. Descriptive statistics, the mean, and standard deviation were calculated for categorical variables such as gender and education level. $P < 0.05$ was considered significant. The reliability of the items was checked with Cronbach's alpha, which scored 0.91.

RESULTS

A total of 526 participants included in a randomized selection were questioned using an online questionnaire in a cross-sectional study. There were 292 female participants (55.5%) and 234 male participants (44.5%). Regarding the education status of the participants, bachelor's degree holders were 345 (65.6%), high-school degree holders were 134 (25.5%), and the lowest was higher degree holders, 47 (8.9%). Furthermore, out of the 526 participants, only 68 (12.9%) knew someone with a prosthesis [Table 1]. Our study found that 74.1% (390) participants did not accept people with prostheses, and only 25.9% (136) accepted. The mean age of the people who were not accepting was slightly lower than that of the accepting people (28.36 vs. 28.65 years; $P = 0.3963$). The percentage of community acceptance of people with prostheses in females was 78 (26.7%) out of 292, higher than the percentage in males, 58 (24.8%) out of 234 [Table 2]. Moreover, the mean score of acceptance for females was also higher than for males ($F = 53.02$, $M = 51.32$), but the difference was not significant ($P = 0.092$) [Table 3]. Regarding educational level, the percentage of community acceptance of people with prostheses was highest in higher degree holders, 13 (27.7%) out of 47; then bachelor's degree holders, 90 (26.1%) out of 345; the lowest in high-school degree holders, 33 (24.6%) out of 134 [Table 4]. Furthermore, the mean score of community acceptance was highest in bachelor's degree holders (52.45) and the lowest

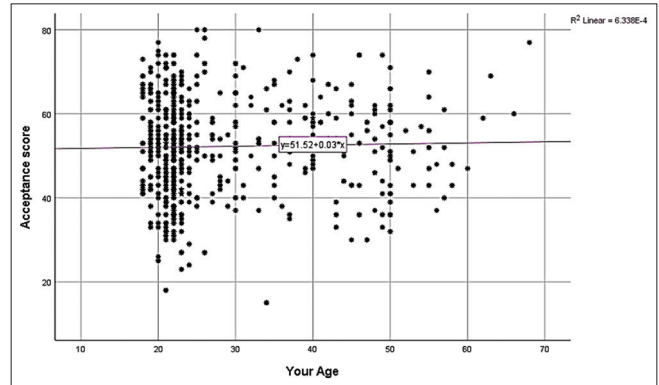


Figure 1: Scatter plot where $r = 0$ shows no relationship between and acceptance score and age.

in high-school degree holders (51.84). However, P -value was insignificant ($P = 0.867$) [Table 4]. We found no correlation between the age and acceptance score, according to the Pearson correlation and P -value ($PC = 0.025$, $P = 0.565$) [Figure 1].

DISCUSSION

In this study, one of the significant findings was the low rate of community acceptance of people with prosthetics. This low rate of community acceptance reflects the lack of community awareness toward people with prosthetics. A 14-year retrospective study was conducted on 3210 amputees who were admitted from 1977 to 1990 at the Riyadh Medical Rehabilitation Center, the first and largest rehabilitation center in Saudi Arabia. The mean age was 30.5 years, with males slightly older than females. The mean age of the lower limb amputees was 32.6, and that of the upper limb amputees was 21.8 years. An overall predominance of male to female with a ratio of 6.1:1 was observed. Males outnumbered females by 5–1 in the upper limb and 6.3–1 in the lower limb amputees. The ratio of the lower limb to the upper limb and multiple limb amputees was 15:3.7:1. Trauma was the leading cause of the upper limb amputations (86.9%).^[9]

In a long term cohort study that assessed the educational, employment, insurance, and marital status among 694 pediatric patients with lower limb amputation. The study found that the only significant positive predictor of employment was having health insurance, and marriage was

Table 4: Acceptance score in terms of educational level.

Educational level	Acceptance score			ANOVA test (F)	P-value
	High school	Bachelor's degree	Higher studies		
n (%)	134 (25.5%)	345 (65.6%)	47 (8.9%)	0.143	0.867
Mean (±SD)	51.84 (±10.904)	52.45 (±11.793)	52.09 (±11.207)		

educational status. The study concluded that their amputation status had no significant influence on psychosocial outcomes.^[10] In a cross-sectional study, which included amputees 18-year old and above, the quality of life (QoL) was significantly lower for amputees compared to the general population.^[11] Moreover, another retrospective cohort study measured the life experience of 80 patients who had bilateral below-knee amputations. It concluded that the patients with prostheses were the only patients who could return to work and, therefore, achieved higher long-term survival.^[12] This means that to improve the QoL and the lifelong survival of patients with prostheses, we must increase community awareness and acceptance of them. As mentioned, this study mainly compared the age, educational level, and gender with the rate of acceptance for people with prostheses in the community. Although there was no significant difference between different degree holders, it was noticed that higher degree holders had higher community acceptance. This may be because participants with a higher level of education have more knowledge about prostheses and how they have helped improve the lives of people who use them. Age had no significant impact on community acceptance. However, we found that the mean age of accepting people was higher than that of unaccepting people. As we mentioned, there was no significant difference between genders, but we found that females had a higher percentage of acceptance.

Our study had several limitations. One of the major limitations is that it was conducted only in Riyadh, and other cities might have different community acceptance in the three domains studied. Furthermore, no other studies had previously been conducted in Saudi Arabia or globally, so this study lacked comparisons or guidance. Moreover, other demographics might have potential significance, such as religion, financial status, and social status. Finally, our study was cross-sectional in nature and assessed respondent perceptions at a specific time.

CONCLUSION

There was no significant difference in community acceptance among varying genders, ages, and levels of education. This implies that these domains did not affect community acceptance significantly. Moreover, community acceptance was quite low in the sample and could be improved. However, the literature is scarce regarding this topic for comparing results.

RECOMMENDATIONS

To solve this issue, we recommend creating a law to protect people with prostheses and ensure their quality in terms of work, education, and social involvement. Furthermore, launching campaigns to increase the community's awareness of people with prostheses and start treating them equally without any discrimination, as their prosthesis does not affect the way that they function.

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AUTHORS' CONTRIBUTIONS

AAH, HSA, SZJ, and AFK contributed equally to this work; MIH and WSJ contributed to the conception of the study; MIH, AAH, HSA, SZJ, and AFK contributed significantly to literature search, data extraction, quality assessment, data analyses, and manuscript preparation; MIH contributed to improving the article for language, style, and protocol preparation; MIH, AAH, HSA, SZJ, and AFK helped perform the analysis with constructive discussions. All authors have critically reviewed and approved the final draft and are responsible for the manuscript's content and similarity index.

ETHICAL APPROVAL

Ethical clearance was obtained from King Abdullah International Medical Research Center in Riyadh at 02/10/2018. Approval number SP18/302/R.

DECLARATION OF PARTICIPANTS CONSENT

The authors certify that they have obtained all appropriate participants consent forms. In the form, the participants have given their consent for their information to be reported in the journal. The participants understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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CONFLICTS OF INTEREST

There are no conflicting relationships or activities.

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