INTRODUCTION

Amputation as a therapeutic procedure is the removal of an extremity when its function has been irreversibly compromised; traumatic amputation is the accidental separation of a limb. Based on the anatomical level of separation, lower limb amputations may range from foot amputations to the more proximal knee and hip disarticulations. The incidence of lower limb amputation varies significantly across the globe, ranging from 5.8 to 31 per 100,000. In England, a 3-year study recorded 34,109 amputations. In Sindh, Pakistan, a total of 1115 patients underwent amputations in between 2007 and 2012, 47.4% of which were of the lower limb.

Although the direct effect of amputation is physical disability, the role of psychosocial adjustment cannot be undermined. Indeed, patients suffer from body image issues that result in anxiety and depression. Over 40% of individuals with amputations suffer from phantom limb pain and/or residual limb pain, which is another cause of anxiety and hinders integration back into society. All these effects contribute to varying degrees in the daily lives of patients with amputations.

HRQOL is a quantitative measure of the degree to which a medical condition or its treatment impacts an individual's life. It represents a perception of his or her physical, mental, emotional, and social functioning.

The aim was to use these factors to ultimately anticipate which individuals are likely to experience greater difficulty adjusting to their new lifestyle, and providing a direction for the evolution of palliative care in Pakistan.

METHODOLOGY

A descriptive cross study was conducted at the Armed Forces Institute of Rehabilitation Medicine (AFIRM) from August 2014 till February 2015. Using WHO sample size calculator, the sample size was calculated to be approximately 52 with confidence level (CL) of 95%, anticipated population proportion (P) of 0.65 and absolute precision (d) of 0.20. Using non-probability purposive sampling techniques, patients coming to...
AFIRM were included in the study. Ethical committee permission was taken. Informed verbal consent was obtained from the participants. Patient of either gender, who had single lower limb amputations, were included. Unwilling, unconscious and those with only toe amputation were excluded. The health related quality of life (physical, mental health perceptions and their correlates) was measured using the SF-36 HRQOL questionnaire.

Data was collected using a standard HRQOL SF-36 close-ended questionnaire - licensed by quality metric health outcomes™ - which had both English and Urdu versions. Those who could read were asked to complete the questionnaire for self-response, whereas those who could not read English or Urdu were interviewed. The individual responses to the questionnaire were entered into the SF-36 scoring software to obtain norm-based scores for the eight health domains as well as the component summary measures. The scores obtained by each respondent were then entered in SPSS version 21 along with demographic details.

The short form (SF-36) health survey is a close-ended, multipurpose questionnaire, that classifies and quantitatively assesses functional health and well-being across eight domains: labelled physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health. These eight domains measure different aspects of two broader categories of health - physical and mental - and thus have been further used to produce two more scores of health: physical and mental component summary (PCS and MCS) measures.9,10

The SF-36 consists of 36 questions, each of which contributes to the scoring of one of the eight health domain scales. The score on each scale ranges from 0 to 100, with higher scores reflecting better health.11 The version of SF-36 used in this study included norm-based scoring (NBS),12 in which each of the health domains and component summary measures had a mean of 50 and a standard deviation of 10 by using T-score transformation, based on the 2009 US general population.13

Data was analysed in SPSS version 21. Descriptive statistics were calculated for all the variables. Qualitative variables including gender, indications for amputations, duration since amputation categories and anatomical level of amputations were presented as frequencies and percentages. Quantitative variables including age and domains of SF-36 health survey were presented as mean and standard deviation. Independent sample t-test and one-way ANOVA was used for comparison of difference in measurement data. During analysis of level of amputation, t-test was applied on two groups only (transtibial and transfemoral amputation) as hip disarticulation had only one case and so was excluded. Differences with a p-value < 0.05 were considered statistically significant.

RESULTS

A total of 52 patients with single lower limb amputation were included in this study. Among them, 3 (5.8%) were females, while the rest of the 49 (94.2%) were males. The mean age of the participants was 30.71±7.50, and the mean duration since amputation was 1.9 ±1.3 years. There were 27 (51.9%) with age equal to or less than 29 years, and 25 (48.1%) with age equal to or more than 30 years.

Trauma was the leading cause of amputation, accounting for 48 (92.3%) out of 52 amputations. Out of the remaining 4 (7.7%), 2 each were the result of cancer and diabetes mellitus. A summary of demographic variables is given in Table I.

The anatomic level of lower limb amputation of the patients was classified into four categories: transtibial, knee disarticulation, transfemoral, and hip disarticulation. In our sample, no patient had a knee disarticulation, and transtibial amputation was the most prevalent (69.2%). The mean overall score obtained by the amputees (trans-tibial and trans-femoral) for each health domain and component summary measure of the SF-36 are shown in Figure 1.

The mean overall physical component summary (PCS) score was lower than the mental component summary score.
It was seen that those with a lower RP score had a significantly lower RE score as well (p=0.003).

DISCUSSION

Amputations are known for the physical challenges they pose in an individual's day-to-day life; however, loss of a limb also has psychological implications such as anxiety, body image issues, and an unsteady return to pre-amputation mental and social well-being, all of which may or may not be a consequence of or aggravated by limitations in physical activity. In this study, the authors attempted to determine the effect of a unilateral lower limb amputation on quality of life, using SF-36 standard domains that assessed the physical and mental components of health.

Numerous studies place trauma as a leading cause of lower limb amputation, second only to complicated diabetes.14 This study showed a pre-dominance of traumatic amputations, probably due to the fact that the majority of the individuals, visiting the rehabilitation centre, were soldiers injured in combat. Lower extremity injuries contribute to over half of all war injuries, resulting in permanent disability.15

Among the amputees in this study, the physical components of health were more severely affected than the mental components (PCS and MCS 38.7 and 44.8, respectively), although both scores were below the normal range of 47 - 53. Vaz et al. in Portugal, also showed similar changes in PCS and MCS measures among lower limb amputees.16 Furthermore, patients...
with below-knee i.e. transtibial amputations tend to feel less physically limited than those with above-knee amputations. This study supported the present literature, showing significantly more hindrance in daily activities as a result of physical disability (RP scores; p=0.041), as the amputation became more proximal. One of the lowest scores in this study was the mean RE score, indicating that patients were having difficulty coping with daily activities as a result of emotional problems. The female patients had particularly lower RE scores (p=0.003). Psychological sequelae are a common complaint among lower limb amputees, irrespective of level of amputation, and roughly half of these individuals feel the need for therapy. Literature shows that in addition to body image anxiety and its consequent social withdrawal, patients tend to extrapolate the consequences of their disability into the future, in an attempt to achieve rehabilitation. In this study, the average MH score was below the norm (43.72), and was significantly lower in patients under the age of 20. Interestingly, females had a better MH score than male amputees. Ephraim et al. showed that almost all amputees experience one or more types of amputation-related pain. This study showed a significant association between bodily pain (BP) and physical limitations (p < 0.05); it also showed that those patients who had a low RP score also had a low RE score (p=0.003), indicating an association between the degree of limitation caused by physical and emotional problems.

CONCLUSION
Amputation adversely affects health related quality of life in multiple ways, particularly the physical domains of health, with consequential difficulty in work and usual activities. Age and indication affected different aspects of quality of life in this study but the level of amputation did not. If these aspects are known and anticipated before any type of rehabilitation, this could help in the anticipation of health consequences and tailored prevention.

REFERENCES