Level of Body Image Disturbance and Self-Esteem among Adolescents with Amputation in Bangladesh

By

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Student's Declaration

- This work has not previously been accepted in substance to any degree and is not concurrently submitted in candidature to any degree.

- This dissertation is being submitted in partial fulfillment of the requirements for the MSc in Occupational Therapy.

- This dissertation results from my independent work/investigation, except where otherwise stated. Other sources are acknowledged by giving explicit references. A Bibliography is appended.

- I confirm that if anything that is identified in my work that I have done is plagiarism or any form of cheating, that will directly award me a failure. I am subject to disciplinary actions of authority.

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Thesis Supervisor's Statement

As supervisor of Professor Dr Mohammad Sohrab Hossain, MSc in Occupational Therapy Thesis work, I certify that she considers her thesis "**Level of Body Image Disturbance and Self-Esteem among Adolescents with Amputation in Bangladesh"** suitable for examination.

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List of Abbreviation

ABIS-R	Amputee Body Image Scale-Revised
BHPI	Bangladesh Health Professions Institute
CI	Confidence Interval
CRP	Centre for the Rehabilitation of the Paralysed
RSE	Rosenberg Self-Esteem
JBI	Joanna Briggs Institute
OR	Odd Ratio
P&O	Prosthetic and Orthotics
RTA	Road Traffic Accidents
SD	Standard Deviation
SPSS	Statistical Package for Social Sciences
BID	Body Image Disturbance
PLP	Phantom Limb Pain
CBT	Cognitive Behavior Therapy
REES	Rosenberg Self-Esteem Scale
TMS	Thengamara Mohila Sabuj Sangha
SARPV	Social Assistance and Rehabilitation for the Physically Vulnerable
WMA	World Medical Association

Abstract

Background: Adolescence is a sensitive period for developing self-identity and confidence. Experiencing a lower-limb amputation during this stage can negatively impact body image, self-esteem, and social participation. Understanding body image disturbance and self-esteem levels among adolescents with limb amputation is crucial for planning effective psychosocial and rehabilitation interventions.

Aim: To assess the levels of body image disturbance and self-esteem and its associated factors among adolescents with amputation.

Methods: A cross-sectional quantitative study was conducted among 59 adolescents with amputation. Data were collected through telephone interviews using standardized tools, the Amputee Body Image Scale Revised (ABIS-R) to assess body image disturbance and the Rosenberg Self-Esteem Scale (RSE) to measure self-esteem levels.

Results: Among the 59 participants, 57.6% reported low body image disturbance, while 42.4% experienced high disturbance. Regarding self-esteem, 69.5% had low self-esteem and 30.5% had high self-esteem, indicating that the majority struggled with negative self-perception and reduced confidence following amputation. Gender differences showed no significant variation in body image disturbance (P = .974), but females exhibited significantly higher self-esteem (P = .041) than males. Participants who were the main earners in their households demonstrated significantly lower body image disturbance (P = .001), suggesting that engagement in meaningful roles and financial responsibility may contribute to better body image adjustment.

Conclusion: The results show that Bangladeshi adolescents with amputation experience significant psychosocial difficulties, including high body image disturbance and low self-esteem. Gender and socioeconomic factors influence their adjustment, highlighting the need for individualized support. Incorporating occupational therapy, peer support, and counseling into rehabilitation can improve self-perception and social reintegration.

Keywords: Body image disturbance, self-esteem, adolescents, lower limb amputation, psychosocial adjustment, Bangladesh.

CHAPTER I: INTRODUCTION

1.1 Background

Amputation is a significant medical and social event that results in the partial or complete loss of a limb. It not only affects an individual physically but also has profound psychological, social, and functional consequences (Alessa et al., 2022). Limb loss may occur due to congenital conditions, trauma, infection, malignancies, or vascular diseases (Dillingham et al., 2002). Amputation may result from several medical or traumatic causes. In adolescents, trauma such as vehicular accidents, falls, burns, or industrial injuries is the leading cause of acquired limb loss (WHO, 2020). Other causes include infections, malignant tumors (e.g., osteosarcoma), and congenital limb deficiencies. The nature and cause of amputation influence rehabilitation outcomes, psychological adjustment, and the degree of functional independence achievable (Smith et al., 2020).

In low and middle-income countries such as Bangladesh, traumatic causes such as road traffic accidents, industrial injuries, and natural disasters remain the most common reasons for amputation, whereas in high-income countries, chronic illnesses like diabetes and peripheral vascular disease are leading contributors (Mousavi et al., 2019; Rahman et al., 2020). The impact of amputation is multidimensional. Physically, individuals experience loss of mobility, reduced functional independence, and dependence on prosthetic devices. Psychologically, limb loss disrupts body integrity, often resulting in depression, anxiety, post-traumatic stress, and altered self-concept (Horgan & MacLachlan, 2004; Senra et al., 2012). Socially, amputees may face stigma, social exclusion, or discrimination, which can compromise their ability to participate in education, employment, or community activities (Hossain et al., 2020). Adolescents, in particular, are at a heightened risk for psychosocial

challenges because they are in a critical stage of identity formation, peer integration, and self-esteem development (Erikson,1998). Adolescence is a period characterized by rapid physical, emotional, and social development. Body image and self-esteem play a pivotal role during this stage, shaping self-perception, social relationships, and psychological well-being (Rosenberg, 1965; Orth & Robins, 2014). The loss of a limb during adolescence can disrupt these developmental processes, leading to body image disturbances, lowered self-esteem, and difficulties in psychosocial adjustment (Mckechnie & John, 2014).

Amputation profoundly affects an individual's physical, psychological, and social life. Physically, patients with limb loss face significant limitations in mobility, strength, balance, and coordination. These challenges often necessitate the use of assistive devices such as prostheses or wheelchairs to regain functional independence (Alessa et al., 2022). In lower-limb amputees, basic activities like walking, climbing stairs, or participating in recreational sports can become difficult or impossible without proper rehabilitation support (Kaur & Guan, 2018). Upper-limb amputees face challenges in performing tasks requiring fine motor skills, including writing, eating, dressing, and self-care (Rybarczyk et al., 1992).

Socially, amputees often encounter stigma, discrimination, and reduced opportunities for education, employment, and social participation. A lack of accessibility, societal prejudices, and insufficient community support can compound these challenges, leading to social isolation (Horgan & MacLachlan, 2004). In adolescents, these challenges are even more pronounced, as peer acceptance, identity formation, and social integration are central developmental tasks. Adolescents with amputation may struggle with self-esteem, body image, and participation in school or sports activities (Senra et al., 2012).

Moreover, the need for ongoing medical care, prosthesis maintenance, and rehabilitation can impose financial strain, particularly in low-resource settings such as Bangladesh (Haque et al., 2019).

Adolescents with limb amputations are at increased risk of psychosocial difficulties compared to adults. Adolescence is a period of rapid physical, emotional, and social development, where body image, peer relationships, and self-esteem play critical roles (Orth & Robins, 2014). Studies in high-income countries such as the United States, Canada, and the United Kingdom indicate that adolescent amputees often experience lower self-esteem, higher rates of social anxiety, and difficulties in academic and extracurricular participation (Murray & Fox, 2002; Senra et al., 2012).

Peer comparison and societal emphasis on physical appearance make body image disturbance a significant concern. Adolescents with amputations may withdraw from social interactions, avoid sports or group activities, and experience difficulties in forming friendships or romantic relationships (Rumsey & Harcourt, 2007). Psychosocial support, including counseling, peer support groups, and school-based interventions, has been shown to improve self-esteem, social participation, and overall adjustment (Gallagher & MacLachlan, 2000).

Body image disturbances in adolescents with limb loss are a prominent concern for psychosocial adjustment. The perception of bodily difference, visible scarring, and limb absence often lead to feelings of embarrassment, shame, and dissatisfaction with appearance. Research indicates that body image dissatisfaction is strongly associated with lower levels of self-esteem, heightened anxiety, depressive symptoms, and reduced

participation in social and physical activities (Gallagher et al., 2007; Senra et al., 2012). Adolescents may internalize societal and peer perceptions about disability, resulting in avoidance of social situations, decreased engagement in recreational activities, and increased risk of social isolation.

Self-esteem reflects the overall evaluation of one's self-worth, is closely linked with body image and psychosocial functioning. Adolescents with lower-limb amputations often report diminished self-esteem due to perceived physical inadequacy and concerns about social acceptance (Rybarczyk et al., 1992; Orth & Robins, 2014). Low self-esteem in this population can negatively influence motivation, coping strategies, and active participation in rehabilitation programs. For instance, adolescents who struggle with self-esteem issues may be less likely to adhere to prosthetic training or participate in school and community activities, which can further limit functional independence and social integration (Senra et al., 2012).

Studies have consistently highlighted the psychosocial impact of amputation on adolescents. A study in the United Kingdom demonstrated that adolescents with limb amputation reported higher levels of body dissatisfaction and lower self-esteem compared to their non-amputee peers. These psychosocial difficulties were closely linked to depressive symptoms and decreased participation in social and physical activities (Senra et al., 2012). Similarly, research in the United States and Canada indicated that adolescent amputees experience significant body image concerns, which are associated with lower psychosocial adjustment, decreased prosthesis satisfaction, and limitations in school and recreational participation (Murray & Fox, 2002; Gallagher & MacLachlan, 2000).

Body image disturbances and low self-esteem are also interrelated with emotional distress and anxiety among adolescents with limb loss. Higher levels of stress and anxiety have been associated with poorer social adjustment, increased depressive symptoms, and lower engagement in physical and social activities (Pedras et al., 2018). Adolescents with unresolved body image concerns may experience traumatic stress responses, which negatively impact both general and social adjustment and reduce their ability to adapt to limitations caused by amputation. Therefore, addressing these psychosocial aspects is crucial for improving the overall well-being and life satisfaction of adolescent amputees.

Rehabilitation is essential for promoting psychosocial well-being, body image acceptance, and self-esteem among adolescents living with limb amputation. Holistic rehabilitation programs typically involving physiotherapists, occupational therapists, prosthetists, psychologists, and vocational specialists help improve functional ability, optimize prosthetic use, and enhance social participation (Batten et al., 2021; Bhuvaneshwari et al., 2022). Psychosocial interventions such as cognitive-behavioral therapy, peer mentoring, and structured support groups are particularly effective in reducing body image distress and strengthening self-esteem (Brady et al., 2023). Evidence increasingly suggests that multidisciplinary, person-centered rehabilitation provides the most comprehensive support by addressing both the physical and emotional needs of young amputees, ultimately improving their overall quality of life

Although research on the psychological experiences of individuals with limb amputation has expanded globally, most existing studies have focused on adult populations or clinical settings in high-income countries. Evidence from different countries indicates that amputation often leads to significant challenges related to body image, self-esteem,

social identity, and emotional well-being (Holzer et al., 2014; Senra et al., 2012: Sarroca et al., 2021; Olaya-Mira et al., 2025). These studies consistently highlight that adolescents may be especially vulnerable due to developmental pressures related to appearance, peer acceptance, and self-concept. However, despite this global attention, there is a noticeable absence of research focusing on Bangladeshi adolescents with limb loss. Little is known about their personal perceptions, adjustment processes, or the cultural and socioeconomic factors shaping their psychosocial outcomes. Generating context-specific evidence is therefore critical to understanding their needs and guiding rehabilitation programs that promote body image acceptance, confidence, and community participation.

The current study sought to determine the level of self-esteem and body image disturbance as well as the factors that influence it in people who have had amputations and use prosthetic devices. The study highlights important implications for rehabilitation professionals, adolescents with amputations, and other pertinent stakeholders involved in promoting community reintegration and general well-being by offering insights into psychosocial adjustment and its determinants.

1.2 Justification

Body image disturbance and self-esteem are important psychosocial aspects that influence the overall rehabilitation and quality of life of adolescents living with amputation. Adolescence is a critical developmental period marked by identity formation, self-awareness, and social integration. The experience of limb loss during this stage can severely impact an individual's perception of their body image and self-worth, which in turn affects participation in education, leisure, and social relationships.

Occupational therapists play a crucial role in addressing these psychosocial challenges by promoting holistic rehabilitation. They focus not only on physical recovery and prosthesis training but also on enhancing self-image, building coping skills, and fostering participation in meaningful occupations. Through therapeutic use of self, activity analysis, and graded participation, occupational therapy interventions aim to rebuild confidence, self-identity, and a positive sense of body image among adolescents with limb loss (Atkins et al., 2020).

In Bangladesh, limited attention has been given to the psychosocial aspects of amputation, particularly among adolescents. Most existing rehabilitation programs primarily emphasize physical restoration, while issues such as body image and self-esteem remain underexplored. To date, there is a scarcity of empirical evidence investigating how adolescents with amputation in Bangladesh perceive their body image and how it affects their self-esteem and daily participation. Understanding these issues is essential to developing contextually relevant rehabilitation strategies that address both the physical and emotional needs of this population.

Several studies have examined the level of psychosocial adjustment among individuals with limb amputations in developed nations such as the United States, Canada, and the United Kingdom. However, there is a notable absence of research in Bangladesh exploring psychosocial adjustment and its influencing factors among adolescent with limb amputees.

Hence, the present study seeks to assess the level of body image disturbance and level of self-esteem and its associated determinants among limb amputees who use prosthetic devices within a selected community in Bangladesh.

1.3 Operational Definition

1.3.1 Body Image Disturbance

Body image disturbance among amputees refers to the negative evaluation and altered perception of the body following limb loss, characterized by dissatisfaction with appearance and function, emotional distress related to these perceptions, and behavioral/psychological impairment in social or self-care contexts (Senra et al., 2020). Among amputees, this may manifest as feelings of incompleteness, embarrassment, or discomfort when using prostheses or appearing in social situations.

1.3.2 Self-Esteem

Self-esteem is the individual's overall evaluation of their own worth or value. It encompasses beliefs about oneself (e.g., "I am capable" or "I am unworthy") as well as emotional states such as pride, shame, and confidence. High self-esteem reflects a positive self-view and emotional stability, while low self-esteem is linked to feelings of inadequacy and depression (Rosenberg, 1965).

1.3.3 Adolescent with Amputation

An adolescent with amputation refers to an individual aged between 10 and 19 years who has undergone the surgical removal of one or more limbs due to trauma, disease, or congenital causes (World Health Organization, 2023). This age group experiences rapid physical, emotional, and social development, making them particularly vulnerable to psychological effects of body image disturbance and low self-esteem following amputation.

1.4 Aim of the Study

To assess the level of body image disturbance and self-esteem and its associated factors among adolescents with amputation.

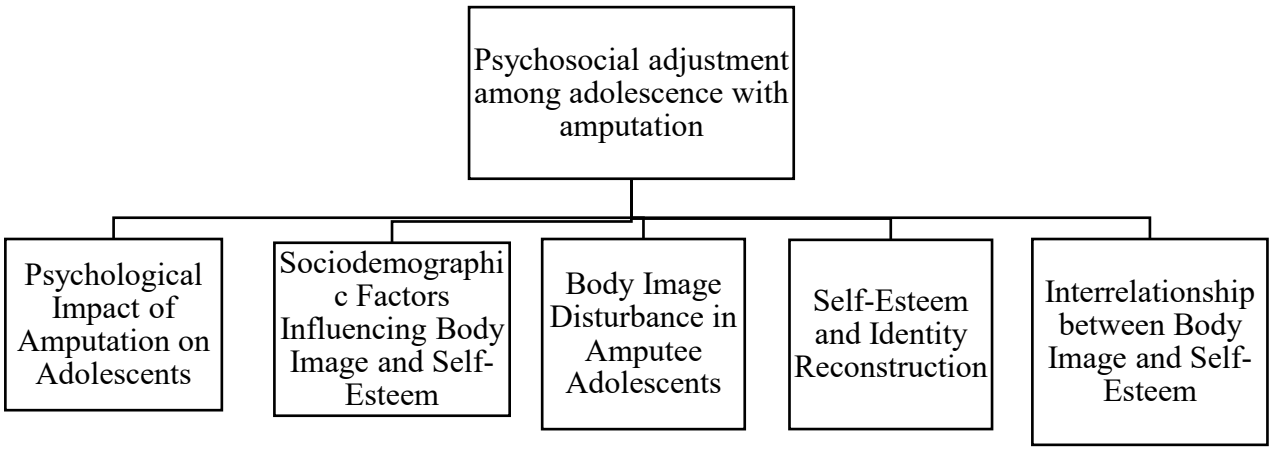
CHAPTER II: LITERATURE REVIEW

This chapter presents information regarding the level of body image disturbance and self-esteem among adolescents with amputation in Bangladesh. In terms of these psychosocial aspects, this chapter includes information from existing literature on body image perception, self-evaluation, and emotional well-being in adolescents with limb loss. It also highlights the influence of psychosocial and socio-demographic factors such as age, gender, socio-economic status, type and level of amputation, and social support on body image and self-esteem.

2.1: Summary of Findings from the Literature

Figure 2.1

Overview of the literature findings



2.2 Psychological Impact of Amputation on Adolescents

Adolescence is a critical period characterized by rapid physical, emotional, and social development. Limb amputation during this stage can have profound psychological consequences, including anxiety, depression, body image disturbance, and difficulties with social adjustment (Calabrese et al., 2023; Demirdel & Ülger, 2021). The psychological impact is influenced by several factors, such as age, sex, socio-economic status, type and level of amputation, social support, and prosthetic use. Understanding these factors is essential to provide effective rehabilitation and psychosocial support for adolescents with amputation.

A cross-sectional study conducted by Demirdel and Ülger (2021) in Turkey included 42 adolescents aged 11–18 years with limb amputation. The study aimed to determine the level of body image disturbance and psychosocial adjustment using validated tools such as the Body Image Disturbance Questionnaire and Pediatric Quality of Life Inventory. The results showed that adolescents with amputation experienced moderate to severe body image disturbance, which significantly correlated with decreased quality of life. The study reported that perceived body image and family income explained 38% of the variance in quality-of-life scores. This highlights the role of early prosthetic fitting and family support in reducing psychological distress and improving functional adjustment.

Boyle (1982) conducted a qualitative study among 27 adolescents with amputation due to trauma or cancer in the United States. Data was collected through structured interviews exploring emotional responses, social relationships, and school participation. The findings revealed that adolescents frequently report anxiety about peer acceptance, difficulties in participating in physical activities, and heightened self-consciousness

regarding appearance. These concerns were most pronounced in individuals who had recently undergone amputation or who had visible limb loss. The study emphasized that body image concerns and social interactions play a central role in adolescents' psychological adjustment following amputation.

A study by McDonald et al. (2021) involving 60 adolescent and young adult amputees in the UK investigated the relationship between body image disturbance and psychosocial outcomes. Using the Body Image Scale and the Hospital Anxiety and Depression Scale, the researchers found that body image disturbance mediated the relationship between personal investment in rehabilitation and psychosocial functioning. Participants with higher levels of body image dissatisfaction reported significantly higher levels of anxiety and depression, lower social participation, and poorer adjustment to school and recreational activities.

Similarly, Calabrese et al. (2023) conducted a systematic review of 25 studies examining psychological adjustment in non-traumatic lower limb amputees, including adolescents. The review reported that body image disturbance, anxiety, and depressive symptoms were prevalent across studies. Social support from family and peers was consistently associated with better psychological outcomes. The review also highlighted that prosthetic satisfaction and functional independence were significant predictors of positive psychosocial adjustment. Adolescents with limited access to appropriate prosthetic devices or rehabilitation services were more likely to experience higher levels of distress and social isolation.

In India, Kumar et al. (2023) conducted a cross-sectional study among 89 adolescents with lower-limb amputation. They used the Trinity Amputation and Prosthesis Experience

Scales (TAPES) and Hospital Anxiety and Depression Scale (HADS) to assess psychological adjustment. The study found that general adjustment (16.3±3.34), social adjustment (15.19±3.59), and adjustment to limitation (12.76±3.15) were lower in participants with higher anxiety and depressive symptoms. Activity restriction scores (11.24±4.21) indicated moderate limitations in daily functioning, while prosthetic satisfaction (7.56±1.67) remained relatively high. This study concluded that anxiety and depressive symptoms significantly affected both social and general adjustment in adolescent amputees.

Singh et al. (2024) conducted a multicenter study in the United States and reported that adolescents with amputation often experience grief and loss, which may manifest as depression, anxiety, or anger. The study included 110 participants aged 12–18 years and utilized the Children's Depression Inventory and the Multidimensional Anxiety Scale for Children. Results indicated that 46% of participants exhibited clinically significant depressive symptoms, while 52% showed elevated anxiety levels. Importantly, those with strong family and peer support reported lower levels of psychological distress, reinforcing the role of social environment in psychological adjustment.

A study in the UK by Atherton and Robertson (2006) applied TAPES to evaluate psychosocial adjustment in adolescent amputees. Among 67 participants, the adjustment to limitation subscale averaged 11.07±5.18, indicating that most adolescents had difficulties adapting to functional limitations. In contrast, social adjustment (20.70±3.61) and general adjustment (19.03±4.43) scores were relatively higher, suggesting that while social and overall adaptation were reasonable, coping with physical limitations remained a significant challenge. These findings were consistent with similar studies in Pakistan and

Haiti (Ali et al., 2017; Randolph et al., 2014), indicating that adjustment to limitation is consistently more difficult than general or social adjustment across cultures.

2.3 Socio-demographic Factors

Socio-demographic factors play a vital role in shaping the psychosocial, emotional, and physical adjustment of individuals following amputation. A cross-sectional study in India reported that gender and educational status significantly influence prosthetic satisfaction and adjustment levels. The study found that females demonstrated higher general adjustment and prosthetic satisfaction compared to males ($p < 0.001$ and 0.025). Educational status was also found to be an influencing factor in both activity restriction and prosthetic satisfaction, where illiterate individuals showed greater activity restriction, while those with secondary education reported higher satisfaction levels, both being statistically significant ($p < 0.001$). Employment status was further identified as a crucial variable, as employed individuals demonstrated better general adjustment than those engaged in other occupations, and pensioners showed greater social adjustment (Kumar et al., 2023).

Similarly, gender differences in psychosocial outcomes were analyzed in a cross-sectional study conducted in Haiti among 140 unilateral lower-limb amputees who lost limbs during the 2010 earthquake. Using the Trinity Amputation and Prosthesis Experience Scales (TAPES), the study revealed no significant gender differences in general adjustment ($p = .735$), social adjustment ($p = .329$), or adjustment to limitation ($p = .106$). However, regression analysis indicated that women scored significantly higher in overall psychosocial adjustment than men, with a mean difference of 0.27 ($p < .003$). This study also found that males had significantly higher activity restriction levels than females ($p <$

.001), emphasizing the importance of gender in rehabilitation outcomes (Randolph et al., 2014).

Age has been another consistently influential factor. A study conducted in Pakistan revealed that older adults (Mean = 113.2, SD = 10.10) showed better psychosocial adjustment compared to middle-aged (Mean = 94.2, SD = 17.35) and younger amputees (Mean = 84.9, SD = 14.39), with statistical significance ($p < .001$). The same study reported that individuals whose amputations were planned (Mean = 118.29, SD = 6.76) adjusted better psychologically than those with unplanned amputations (Mean = 89.98, SD = 15.01), also highly significant ($p < .001$). These findings highlight that both age and cause of amputation significantly affect psychosocial outcomes (Ali et al., 2017).

In a systematic review examining psychosocial and physical adjustment following lower-limb amputation, Luza et al. (2019) concluded that age, gender, employment status, and educational background were prominent socio-demographic determinants of successful adjustment. The study, which reviewed 16 peer-reviewed articles published between 2007 and 2017, emphasized that individuals with stable employment and higher education tend to have stronger coping mechanisms and better social reintegration. Employment plays a dual role not only ensuring financial security but also providing a sense of purpose and identity, thereby reducing feelings of dependency and low self-esteem.

Marital status also contributes to post-amputation psychological well-being. Married individuals often exhibit better self-esteem and body image compared to single or divorced individuals due to greater emotional and social support. In contrast, unmarried individuals may report higher body image disturbance and reduced self-confidence because of

perceived social isolation and reduced partner support. Similar observations were made in a study by Desmond and MacLachlan (2006), which found that social support systems, such as spousal and family relationships, strongly predict successful body image reconstruction and self-esteem recovery among amputees.

Overall, the evidence suggests that socio-demographic factors such as age, gender, marital and employment status, education, and cause of amputation have significant implications for both self-esteem and body image among amputees. Educated, employed, and socially supported individuals generally demonstrate better psychological adaptation, while younger, unemployed, or single individuals face more challenges in reconstructing body image and achieving emotional stability following limb loss.

Physical factors are equally critical in determining post-amputation adjustment, particularly in relation to body image and self-esteem. A cross-sectional study conducted in India from 2020 to 2022 among 89 lower-limb amputees reported that the level of amputation was a significant determinant in adjustment to limitation, with a p-value of .003 (Kumar et al., 2023). Individuals with below-knee amputations tend to exhibit better adaptation and functional outcomes compared to above-knee amputees, largely due to easier prosthetic fitting and improved mobility potential.

Pain-related factors, including phantom limb pain (PLP) and residual limb pain (RLP), also exert considerable psychological and physical influence. A systematic review by Luza et al. (2019) found that both phantom and residual limb pain significantly impact psychosocial adjustment and self-esteem. Similarly, Desmond et al. (2008), in their study of 89 lower-limb amputees, found that individuals experiencing no pain reported significantly better general adjustment and adjustment to limitation compared to those with

either phantom or residual limb pain. The presence of persistent pain interferes with prosthesis use, limits activity participation, and reinforces negative body image perceptions.

The duration of amputation has also been highlighted as an important factor in psychological recovery. In a comprehensive review by Horgan and MacLachlan (2004), duration since amputation was directly associated with better psychosocial adjustment, as individuals gradually adapt to prosthetic use, body image changes, and functional routines. Those in the early stages of post-amputation typically experience greater body dissatisfaction, anxiety, and self-esteem issues, which tend to diminish over time as adaptation occurs.

Another influential factor is daily hours of prosthesis use, which has been found to be a strong predictor of psychosocial and physical adaptation. The systematic review by Luza et al. (2019) concluded that longer prosthesis use per day correlates with improved self-image, enhanced social participation, and higher levels of perceived independence. Consistent prosthesis usage fosters a sense of body completeness, thereby improving body satisfaction and confidence. Conversely, irregular or limited use is associated with frustration, activity restriction, and negative self-concept.

Finally, comorbidities such as diabetes, cardiovascular disease, and peripheral vascular conditions can delay rehabilitation and influence overall adjustment outcomes. Individuals with multiple health issues may experience prolonged recovery periods, restricted mobility, and heightened dependence on caregivers, all of which can adversely affect body image and self-esteem. The review by Luza et al. (2019) identified

comorbidities as one of the most common physical constraints affecting long-term psychological well-being and prosthesis satisfaction.

2.3 Body Image Disturbance in Amputee Adolescents

Body image disturbance (BID) is a consistently reported and clinically important outcome following limb amputation, and its impact is amplified during adolescence a period of identity formation and peer comparison. A cross-sectional study of adolescents (N = 42; mean age 14.24 ± 2.25 years) in Turkey used the Amputee Body Image Scale (ABIS), the psychosocial adjustment subscale of the Trinity Amputation and Prosthesis Experience Scale (TAPES) and the Pediatric Quality of Life Inventory (PedsQL). Demirdel and Ülger (2021) found significant correlations between BID, age at first prosthesis fitting, psychosocial adjustment and quality of life: perceived body image and family income together predicted 38% of the variance in QoL, and perceived body image predicted 34% of the variance in psychosocial adjustment ($p < .05$). Adolescents reporting phantom limb pain had lower QoL scores, indicating an interaction of pain and body image in young users (Demirdel & Ülger, 2021).

Large cross-sectional analyses that include amputees provide model-based evidence that body image disturbance mediates relationships between personal investment/self-ideal discrepancy and psychosocial outcomes. McDonald et al. (2021) tested White's (2000) heuristic model in two clinical groups (amputation N = 227; diabetes N = 212) and showed that body image disturbance fully mediated personal-investment psychosocial outcome and partially mediated self-ideal discrepancy psychosocial outcome pathways in the amputation group; the structural model explained a larger proportion of variance in psychosocial outcomes for amputees ($R^2 \approx .64$) than for the diabetes group. Although the

McDonald sample is adult dominated, the theoretical implications are directly relevant to adolescents: high personal investment in appearance and large self-ideal discrepancies are likely to drive poorer psychosocial outcomes after limb loss. The study underlines the need to address body image as a proximal therapeutic target.

Qualitative and phenomenological research emphasize how adolescents experience body-related stigma and social withdrawal after limb loss. Roșca et al. (2021) used interpretative phenomenological analysis (IPA) of recently amputated patients and identified themes of body disintegration, shame when observed by others, and a tendency toward isolation—processes that map closely onto the body-image narratives reported by adolescent participants in several studies. Although the Roșca sample was adult, the themes (fear of being "different", isolation, shame) have been repeatedly observed in adolescent qualitative reports and explain behavioural avoidance that sustains BID (Roșca et al., 2021).

Prosthesis fit cosmesis and use are repeatedly shown to moderate body image in young amputees. Singh et al. (2020) reported in a cross-sectional adolescent cohort (ages ~13–18; N = 75) that higher prosthetic satisfaction significantly correlated with better body image and self-esteem ($p < .05$). Demirdel and Ülger (2021) also found that earlier fitting of the first prosthesis related to lower BID, suggesting a sensitive early window where restoring bodily integrity promotes healthier body representation. Conversely, poor cosmetic outcomes, discomfort, or limited prosthesis function reinforced perceptions of incompleteness and increased BID. These findings support clinical strategies emphasizing early, functionally and aesthetically acceptable prosthetic provision for adolescents.

Level of amputation and visibility of limb loss influence body image severity. Studies show that more proximal amputations (e.g., transfemoral or upper limb loss) are associated with greater body image disturbance than distal (transtibial/below-knee) loss, likely because of greater functional impact and more obvious visible asymmetry. Gallagher and colleagues' scale work (and later clinical studies summarized in reviews) demonstrates that higher-visibility losses are linked to increased social anxiety and body dissatisfaction; recent reviews of youth and young-adult cohorts echo this pattern (Maciver et al., 2024). Thus, level of amputation should be treated as a consistent risk marker for BID in adolescent populations.

Temporal factors and pain interact with BID. Systematic and narrative reviews indicate that the duration since amputation is a key determinant: BID and associated distress are typically highest in the early post-amputation period and often decrease as individuals adapt, learn to use the prosthesis, and reintegrate socially. However, persistent phantom limb pain (PLP) or residual limb pain (RLP) is strongly associated with worse body image and lower QoL across age groups; in Demirdel et al.2021 adolescent sample PLP was linked to lower QoL ($p < .05$), and larger reviews (2015–2024) identify pain as a recurring predictor of poor psychological outcome (Demirdel & Ülger, 2021; Luza et al., 2019. Pain limits activity reduces prosthesis wear time and sustains negative bodily attention mechanisms that reinforce BID.

Cultural context, social support and stigma moderate the relationship between amputation and body image. Mixed methods work from varied settings (e.g., clinical cohorts in Turkey, multicentre analyses in Europe) show that family support, peer acceptance, and culturally specific meanings of bodily "wholeness" influence whether

adolescents internalize or resist stigmatizing narratives. Interventions that combine early prosthetic rehabilitation with family-centered psychosocial therapy (CBT for body image, peer-group interventions) show promise in reducing BID and promoting adaptive identity reconstruction recommendations echoed in recent systematic syntheses and clinical reviews (Maciver et al., 2024; Demirdel & Ülger, 2021).

2.4 Self-Esteem and Adolescents with Amputation

Self-esteem is a fundamental psychological construct influencing adjustment and overall well-being after amputation, particularly during adolescence, a developmental stage defined by identity formation, body awareness, and peer comparison. A cross-sectional study by Demirdel and Ülger (2021) explored the interrelationship between body image, psychosocial adjustment, and quality of life in adolescents with limb loss (N = 42, aged 13–18 years). Using the Amputee Body Image Scale (ABIS), Trinity Amputation and Prosthesis Experience Scales (TAPES), and the Pediatric Quality of Life Inventory (PedsQL), they found a strong positive correlation between self-esteem and psychosocial adjustment ($r = 0.64$, $p < .01$). Adolescents with higher self-esteem reported fewer body image disturbances and better adaptation to prosthesis use. Importantly, early prosthesis fitting and higher family income predicted better self-esteem outcomes, accounting for 35% of variance in quality-of-life scores. The findings suggest that stable self-worth acts as a resilience mechanism that buffers against psychosocial distress post-amputation (Demirdel & Ülger, 2021).

Gurpınar et al. (2020) investigated self-esteem and emotional adjustment among Turkish adolescents with unilateral upper and lower limb amputations (N = 60, aged 12–19). Using the Rosenberg Self-Esteem Scale (RSES) and Hospital Anxiety and Depression

Scale (HADS), the study revealed that 41.7% of participants demonstrated low self-esteem levels, with significantly higher anxiety and depressive symptoms ($p < .001$). Adolescents with visible upper limb amputations reported lower self-esteem compared to those with lower limb amputations, highlighting the role of body visibility in self-perception. The study also emphasized that gender differences were not statistically significant, suggesting that self-esteem difficulties are pervasive across both male and female adolescents after amputation. Family support, however, was identified as a crucial moderating factor, where adolescents reporting high parental involvement demonstrated higher self-esteem (Gürpınar et al., 2020).

A Brazilian cross-sectional study conducted by Luza et al. (2019) reviewed 16 studies over the previous decade and concluded that self-esteem was one of the strongest predictors of psychosocial adjustment and prosthetic satisfaction among young and adult amputees. The study synthesized findings from different regions, indicating that age at amputation, employment status, and educational background significantly influenced self-esteem levels. Adolescents who maintained academic participation and peer engagement showed higher global self-esteem and functional adaptation. These findings reinforce that self-esteem is not a static construct but evolves through occupational and social reintegration processes.

Singh et al. (2020) further reported that adolescents with higher prosthetic satisfaction had significantly higher self-esteem ($p < .05$), confirming the interdependence of functional ability, aesthetic acceptance, and internalized self-worth. Similarly, Ali et al. (2017) found that adolescents who underwent planned amputations with prior psychological preparation demonstrated higher mean self-esteem ($M = 113.2$, $SD = 10.10$)

than those with unplanned traumatic amputations ($M = 94.2$, $SD = 17.35$; $p < .001$). The researchers attributed this difference to a sense of control and cognitive readiness prior to limb loss, which mitigates post-amputation identity disturbance.

A recent qualitative study by Kar and Kutlu (2023) explored body image and self-esteem among lower limb amputees through semi-structured interviews ($N = 35$, mean age 17.6). They found three recurring themes "lost wholeness," "social invisibility," and "reconstruction of self." The adolescents described difficulty in accepting their physical difference, avoidance of social gatherings, and distress when observed by peers. However, prosthetic rehabilitation and participation in sports activities gradually improved their self-esteem and self-image. This study underscores that the occupational engagement and social reintegration processes are essential to rebuilding self-worth after amputation (Kar & Kutlu, 2023).

Brauckmann et al. (2024) analyzed psychosocial outcomes and satisfaction after major limb amputation among German adolescents and young adults ($N = 92$). Using standardized quality-of-life and self-concept questionnaires, they found that self-esteem significantly predicted both mobility, confidence and overall life satisfaction ($\beta = 0.42$, $p < .01$). Adolescents who perceived themselves as physically competent reported less body dissatisfaction and higher participation in recreational activities. The findings reinforce that functional independence is intricately connected with self-esteem maintenance among youth with amputations.

A systematic review and meta-analysis by Maciver et al. (2024) consolidated data from multiple global studies (2015–2023) examining psychosocial determinants of quality of life among young amputees. They found that low self-esteem strongly mediated the

relationship between body image disturbance and depression ($r = -0.58$, $p < .001$). Adolescents with low self-esteem were more vulnerable to social withdrawal, negative self-appraisal, and emotional dysregulation. Conversely, early peer-group inclusion, counseling, and adaptive sports participation were associated with significant improvements in self-esteem and psychological well-being. The review emphasized a biopsychosocial approach integrating physical rehabilitation with psychological interventions targeting self-concept to improve long-term adaptation.

Recent evidence also supports the link between pain perception and self-esteem. Persistent phantom limb pain (PLP) was associated with reduced self-esteem and increased distress among adolescent amputees. Pain acted as a continuous reminder of limb loss, interfering with identity reconstruction (Demirdel & Ülger, 2021). Furthermore, comorbid depressive symptoms and school absenteeism compounded self-esteem deterioration, especially among adolescents with limited access to peer support networks.

In contrast, Roșca et al. (2021) highlighted that fostering autonomy and providing psychological support during rehabilitation improved self-concept and mitigated helplessness among adolescent amputees. The study concluded that targeted cognitive-behavioral interventions focusing on positive self-talk, acceptance, and role participation were effective in restoring self-esteem and reducing psychosocial distress.

2.5 Interrelationship Between Body Image and Self-Esteem

Body image and self-esteem are deeply interrelated psychosocial constructs that significantly affect emotional well-being and adjustment among individuals with amputations, particularly adolescents.

A study by Murray and Forshaw (2020) involving 45 lower-limb amputees in the United Kingdom found that individuals with higher body image disturbance, measured through the Amputee Body Image Scale (ABIS-R), reported significantly lower self-esteem scores on the Rosenberg Self-Esteem Scale (RSES) ($r = –0.61$, $p < .001$). This finding supports the idea that self-worth is highly influenced by the ability to perceive oneself as whole and socially acceptable. Similarly, Senra et al. (2018) conducted a cross-sectional study in Portugal with 72 amputees aged between 18 and 45 and found that negative body perception mediated the relationship between perceived social stigma and low self-esteem. The authors emphasized that psychosocial rehabilitation must address self-perception and self-worth simultaneously, as isolated interventions focusing only on functional rehabilitation may fail to restore full psychosocial adjustment.

In adolescent populations, the interconnection between body image and self-esteem is even more pronounced because adolescence is a critical developmental stage marked by self-discovery, social comparison, and identity formation. A recent study by Horgan et al. (2021) on 38 adolescent prosthesis users (aged 13–19 years) demonstrated that adolescents with high body dissatisfaction had significantly lower global self-esteem and were more likely to experience depressive symptoms. Moreover, female adolescents reported higher body image disturbance than males, which aligns with gendered expectations of physical appearance and attractiveness. These findings are consistent with the observations of Nair et al. (2019) in an Indian sample, where adolescents with visible physical differences expressed lower confidence and increased social withdrawal.

Theoretical perspectives also help explain the mechanism linking body image and self-esteem. Cash’s Cognitive-Behavioral Model of Body Image (Cash & Smolak, 2011)

posits that appearance-related schemas and self-evaluative beliefs influence global self-esteem through internalized standards of beauty and perceived body functionality. Applying this framework to amputees, loss of a limb challenges not only aesthetic self-perception but also functional capability, which undermines self-efficacy and, consequently, self-esteem. In support, Rybarczyk et al. (2016) found that among 100 adults with lower-limb amputations in the United States, body image satisfaction predicted 43% of the variance in self-esteem, even after controlling for pain, age, and duration since amputation.

Another critical perspective comes from the biopsychosocial model, which integrates physical, emotional, and social domains of adjustment. Desmond and MacLachlan (2018) highlighted that body image dissatisfaction often triggers social avoidance behaviors, leading to reduced participation in community and peer activities, which in turn lowers self-esteem through perceived isolation and reduced validation. This reciprocal relationship indicates that interventions must not treat body image and self-esteem as separate constructions but as mutually reinforcing elements of psychosocial health.

In more recent years, intervention-based studies have shown promising outcomes in improving both body image and self-esteem among amputees. Gallagher and MacLachlan (2022) implemented a cognitive-behavioral group intervention among 60 individuals with limb loss and reported significant improvements in both ABIS and RSES scores post-intervention ($p < .01$). Similarly, a quasi-experimental study by Ahmed et al. (2023) in Bangladesh found that occupation-based activities involving mirror therapy, expressive art, and group sharing sessions improved participants perceived body integrity and self-confidence. These findings suggest that psychosocial interventions addressing both

constructs can enhance rehabilitation outcomes more effectively than traditional physical therapy alone.

Cultural factors also moderate the strength of the body image–self-esteem relationship. Studies from collectivist societies such as South Korea and Bangladesh (Chung et al., 2021; Ahmed et al., 2023) indicate that family support and community acceptance play buffering roles, mitigating the negative effects of altered body perception. Conversely, in individualistic cultures, where self-reliance and personal image are emphasized, the correlation between physical appearance dissatisfaction and low self-esteem is stronger (Kaur & Singh, 2017). Therefore, understanding the cultural context is essential for developing effective psychosocial interventions for amputees.

Across these studies, it is evident that body image and self-esteem share a bidirectional and dynamic relationship that affects not only psychological health but also social functioning and quality of life. Negative body image contributes to feelings of shame, social withdrawal, and depression, while low self-esteem reinforces dissatisfaction with body appearance and functionality. The cumulative effect can hinder rehabilitation motivation and long-term adjustment. Integrating self-esteem–building interventions within prosthetic training and occupational therapy can therefore help foster both body acceptance and personal empowerment (Horgan et al., 2021; Gallagher & MacLachlan, 2022).

Key gaps of these studies:

- Most existing studies focus on adults, not adolescents, even though adolescence is a crucial stage for identity and body image development.
- Limited research specifically examines upper limb amputees, despite their unique mobility and social challenges.
- Very few studies have been conducted in low-resource countries, including Bangladesh, where stigma, poverty, and limited rehabilitation access may worsen psychosocial outcomes.
- No studies in Bangladesh have assessed body image disturbance and self-esteem together within the same adolescent amputee population.

CHAPTER III: METHODS AND MATERIALS

3.1 Study Question, Aim, Objectives

3.1.1 Study Question

What is the level of body image disturbance and self-esteem among adolescents with amputation in Bangladesh?

3.1.2 Aim

To assess the level of body image disturbance and self-esteem and its associated factors among adolescents with amputation.

3.1.3 Objectives

- To assess the level of body image disturbance among adolescents with amputation.
- To evaluate the self-esteem levels of adolescents with amputation.
- To assess the influence of associated factors (e.g., age, gender, type of amputation, duration since amputation) on body image disturbance and self-esteem.

3.2 Study design

3.2.1 Method

This study employed a quantitative research approach, as its primary aim was to measure and analyze numerical data on body image disturbance and self-esteem among adolescents with amputation. Quantitative methods are well suited for research that seeks to quantify variables, test hypotheses, and examine relationships between measurable concepts using statistical analysis (Creswell & Creswell, 2018).

3.2.2 Approach

A cross-sectional survey design was employed in this study to collect data. This approach allows the researcher to measure all relevant variables at the same point in time, facilitating the examination of relationships between them without needing prolonged follow-up. Because it is relatively quick, cost-effective, and efficient, a cross-sectional design is well-suited for achieving the aims of this study (İrday, 2024).

3.3 Study Setting and Period

3.3.1 Study Setting

The study was conducted by collecting participant data list from CRP Savar and Mirpur branches, TMSS Bogura, SARPV, Step Rehab Center Dhaka.

3.3.2 Study Period

- The period of the study was from January 2025 to November 2025.

3.4 Study participants

3.4.1 Study Population

The population included adolescents aged 9-19 years with upper or lower limb amputation.

3.4.2 Sample Size

The sample size for this study was calculated using the formula for estimating a population proportion:

$$n = \frac{Z^2 \times p \times q}{d^2}$$

Where:

- n = required sample size
- Z = standard normal deviation corresponding to the desired confidence level (1.96 for 95% confidence)

- p = estimated proportion of the population with the attribute of interest (0.5)
- q = 1 – p (0.5)
- d = degree of accuracy or margin of error (0.05)

Substituting the values:

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} = 384.16$$

Non-response 60% was added. So, sample size was = {384 + (60% of 384)}

= (246+230) = 476

≈ 476

The total sample size is 476.

Therefore, the minimum required sample size was 476 participants**.**

As the number of adolescents with amputation is very low who use prothesis. As a researcher, I tried my best to reach participants high number collected as possible. Also, investigator had only 1 month for data collection, it quite difficult to reach this large number (n=476) sample size. That's why the investigator collected 59 participants.

3.4.3 Sampling Techniques

The participants for this study were selected through a purposive sampling procedure, based on defined inclusion and exclusion criteria. This sampling technique was chosen because only individuals who met those specified criteria could provide the relevant information. Purposive sampling was considered the most appropriate method for recruiting participants aligned with the study's objectives (Campbell et al.,2020)

Inclusion Criteria

- Adolescents aged 9 to 19 years
- Diagnosed with unilateral or bilateral upper or lower limb amputation

Exclusion Criteria

- Adolescents with cognitive impairments or psychiatric diagnoses that may interfere with understanding or completing questionnaires
- Adolescents currently undergoing psychiatric treatment related to body image or self-esteem

3.5 Variables

3.5.1 Socio-demographic variables (predictors)

- Age
- Sex
- Education
- Living area
- Monthly income
- Occupational status
- Causes of amputation

3.5.2 Physical factors variables (predictors)

- Phantom pain and residual limb pain
- Level of amputation
- Daily hours of prosthesis use
- Duration of amputation

3.5.3 Body image disturbance (predictors)

- Feel more anxious about physical appearance
- Like overall physical appearance when prosthesis use.
- Loss of limb that impairs body's functional capabilities.
- Avoid looking into a full-length mirror
- I feel anxious about physical appearance daily.
- Experience a phantom limb.
- Losing my limb, it bothers me.
- Loss of limb that impairs the ability to protect from harm
- Avoid situations where physical appearance can be evaluated by others when not using the prosthesis.
- Loss of limb that makes me think disabled.
- Like my physical appearance without prosthesis use.
- While walking, people notice a limp
- Avoid situations where physical appearance can be evaluated.
- People are treated as disabled.
- Like the appearance of stump anatomy.
- Wear baggy clothing to hide the prosthesis
- Feel I must have four normal limbs
- Affected limb prostheses are the same size as the other limb
- Avoid looking into a full-length mirror due not to seeing stump anatomy.

3.5. 4 Self-Esteem

Positive Self-Esteem Indicators

- I feel that I am a person of worth, at least on an equal basis with others.
- Believe that I have a number of good qualities.
- Feel that I can do things as well as most other people.
- Take a positive attitude toward myself and my abilities.
- I feel satisfied with myself most of the time.

Low Self-Esteem Indicators

- At times, I feel that I am not good at all.
- Feel that I do not have much to be proud of.
- Occasionally, I feel useless or inferior to others.
- I wish that I could have more respect for myself.
- Feel that I am a failure or that I let myself down.

3.6 Data sources/ measurement

First, the researcher created an initial list of potential participants, taking into account the inclusion and exclusion criteria from the prosthetics and orthotics department of the CRP (Savar and Mirpur), TMSS Bogura, SARPV, Step Rehab center, Dhaka. Then, information was collected about potential participants who had returned to the community after receiving prosthetic services, and all potential participants were listed. After that, the researcher contacted them by telephone to provide basic information about the research and the research's purpose verbally. When the participant showed interest in participating in the study, the investigator called the participants. If the participant was eligible for the study, data was collected from them using standardized tools.

3.7 Ethical Considerations

As a statement of ethical principles for medical research, the World Medical Association (WMA) created the Declaration of Helsinki (World Medical Association Declaration of Helsinki, 2022).

3.7.1 Ethical approval from IRB

The ethical clearance for the study was sought from the Institutional Review Board (IRB) of BHPI by explaining the study purpose, through the Department of Occupational Therapy, Bangladesh Health Professions Institute (BHPI).

3.7.2 Informed Consent

Information sheet: The researcher explained the purpose of the research to the participant, and those who feel willing to participate, their data will be collected. Verbal consent was received from the participants as they had been interviewed over the phone.

Consent form: The Researcher gave an explanation of the purpose of the study; the participant chose to voluntarily participate in the study. The consent was taken by a verbal consent form.

Withdrawal form: Participants had the right to voluntarily withdraw from participating in the study before starting the data analysis. For this, a withdrawal form was attached with information sheet and informed the participant about this.

3.7.3 Unequal Relationship

A standardized questionnaire was used by the researcher to collect data, and participants filled it out on their own. This strategy ensured a balanced power relationship by removing potential bias.

3.7.4 Risk and Beneficence

Risk and beneficence were not associated with research participation. This study did not have any financial or other benefits.

3.7.5 Confidentiality

The student researcher was strongly committed to keeping participant information confidential. Only the supervisors received access to the participant's information, as stated clearly in the information sheet. Moreover, any identifying information about the participants was not shared for use in reports, publications, conferences, media, or other written or spoken conversations in the future. Through the information sheet, participants were made fully aware of confidentiality.

3.7.6 Volunteer recruitment

Three individuals were enlisted in the study. Three people expressed interest in volunteering after the researcher distributed information. After gathering data, the participants were given a nominal honorarium but were not paid. The volunteers were trained on the data collection procedure by the researcher once they were recruited. Each volunteer carried out field tests by gathering information from two participants following the training. Lastly, the volunteers gathered information from the subjects.

3.7.7 Data collection process

3.1: Participants Recruitment Process

Figure: 3.1

Overview of the participant's recruitment process

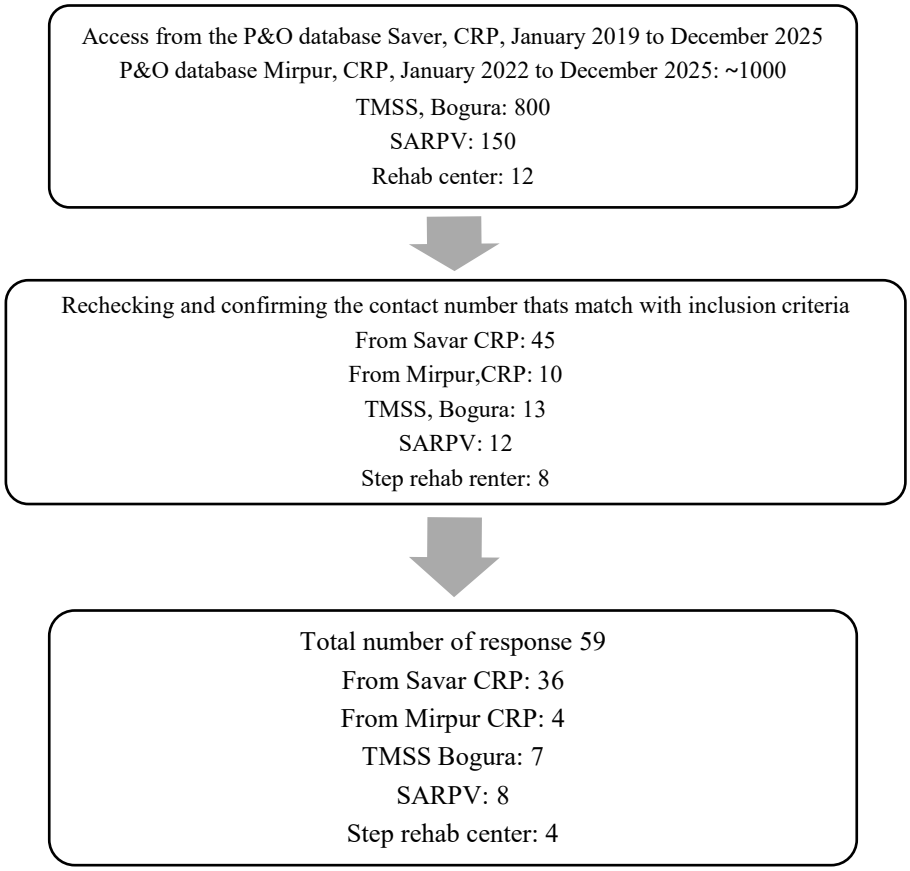


Figure 3.1 above explains the participant's recruitment process. All (59) data were collected over the phone, 20 data were collected with the volunteer, and the researcher collected 39 data. Data is kept in the audio as a record on an audio recorder.

3.8 Data Collection

3.8.1 Data Collection Method

The researcher conducted a telephone survey to gather data from participants because all the participants live in communities in different regions. It was challenging to contact the participants for in-person interviews. Since each participant lives in a community in a different area, the researcher used a telephone survey to collect data from them. Therefore, it was challenging to contact the participants for in-person interviews. Conversely, telephone surveys were less expensive than in-person surveys and offered good geographic coverage and human engagement (Sibai et al., 2016)

3.8.2 Data Collection Instruments

1. A self-administered semi-structured questionnaire was developed based on collecting socio-demographic information from the respondents.

2. Amputee Body Image Scale Revised version:

ABIS-R refers to the shortened version of the Amputee Body Image Scale (ABIS). It is a self-administered questionnaire designed to assess the body image disturbances experienced by individuals who have undergone amputation. The 14 items consist of the shortened version (ABIS-R), and the scoring is 0 = none of the time, 1 = sometimes, and 2 = most/all of the time. The ABIS-R is a valuable tool for clinicians and researchers to understand and address the psychological impact of amputation on patients. Amputation Body Image Scale-Revised (ABIS-R): The Amputation Body Image Scale-Revised (ABIS-R) was used to measure the body image of individuals with lower limb amputation. It consists of 14 items and is scored on a three-level ordinal scale: 0 none of the time, 1

sometimes, and 2 = most/all of the time. Higher scores indicate greater disturbance in body image (Gallagher et al., 2007). In this scale, forward and backward translation will do to maintain the gold standard of translation (Gudmundsson, 2009). This scale has permission to use and copyright issues.

3. Self-Esteem-Rosenberg's Self-Esteem Questionnaire (RSE)

The Rosenberg Self-Esteem Scale (RSE) is a self-report questionnaire with 10 items that assesses general personal self-esteem in one summary scale. Each item is rated on a four-point Likert scale from 0 (strongly agree) to 3 (strongly disagree), producing a cumulative score from 0 to 30, whereby high mean scores (computed) indicate high self-esteem. As the RSE is a Guttman scale, scoring can be a little complicated. Scoring involves a method of combined ratings. Low self-esteem responses are “disagree” or “strongly disagree” on items 1, 3, 4, 7, 10, and “strongly agree” or “agree” on items 2, 5, 6, 8, 9. Two or three out of three correct responses to items 3, 7, and 9 are scored as one item. One or two out of two correct responses for items 4 and 5 are considered as a single item; items 1,8, and 10 are scored as individual items; and combined correct responses (one or two out of two) to items 2 and 6 are considered to be a single item. The scale can also be scored by totaling the individual 4 points items after reverse-scoring the negatively worded items **(**Hrabosky, 2004**)**

3.8.3 Field Test

The questionnaire was translated into Bengali, the native tongue of Bangladesh, by the student researcher with assistance from the supervisor and a formal Bengali writing specialist. The questionnaire was pretested among five respondents who were outside the

research region but similar to the study population in order to find any potential issues. Following pretesting, the questionnaire was finalised and adjusted as needed for the research.

3.9 Data analysis

- The data were analyzed using the latest software, Statistical Package for Social Science (SPSS, version 26).
- Descriptive data were analyzed by simple frequency distribution (mean, standard deviation, percentage).
- An inferential statistical test was performed to find out the association (such as an independent t-test, One-way ANOVA test)

CHAPTER IV: RESULTS

A cross-sectional study was conducted on the level of body image disturbance and self-esteem among adolescents with amputation in Bangladesh. This chapter presents the study's findings in tables and figures, with an emphasis on the socio-demographic information, level of body image disturbance, level of self-esteem, and association of sociodemographic information related to body image disturbance level and self-esteem level among adolescents with amputation in Bangladesh.

4.1 Sociodemographic characteristic

Table 4.1

Distribution of sociodemographic characteristics of the respondents

Variables	Category	Frequency (n=59)	Percentage (%)
Gender	Male	37	62.7
	Female	22	37.3
Age	> 15years	12	20.3
	≤ 15years	47	79.7
	Median= 17 years, IQR= 15-18 Years, Maximum= 19 years, Minimum= 10 years		
Marital Status	Married	8	13.6
	Unmarried	51	86.4
Family Members	> 5 members	36	61
	≤ 5 members	23	39
	Mean ± SD= 5 ± 1.818 members, Maximum= 11, Minimum= 02 members.		
Highest Level of Education Acquired	Primary Education	9	15.3
	Secondary Education/Dakhil	47	79.7

	Higher Secondary/Alim	3	5.1
Job Status	Students	39	66.1
	Others	20	33.9
Living Area	Rural	39	66.1
	Urban	20	33.9
Monthly income	> 25000 Tk	38	64.4
	≤ 25000 Tk	21	35.6
Main earning member	Yes	3	5.1
	No	56	94.9
Level of amputee	lower limb	55	93.2
	upper limb	4	6.8
Duration of amputee	> 100 months	30	50.8
	≤ 100 months	29	49.2
Duration of prosthesis use	> 37 Month	41	69.5
	≤ 37 Months	18	30.5
Daily Hours of Prosthesis Use	Equal or Below 8 hours	43	72.9
	over 8 hours	16	27.1
	Mean ± SD= 6.03± 3.728hours, Maximum= 1hour, Minimum= 16 hours.		
Have You Experienced Phantom Limb Pain	Yes	21	35.6
	No	38	64.4
Existing Comorbidities	Yes	4	6.8
	No	55	93.2

Note: Perform descriptive statistic test; where; SD= Standard Deviation IQR= Interquartile Range.

Table 4.1 portrays an overview of the socio-demographic details of amputee participants using prostheses. The study included 59 participants, among whom 62.7% (n=37) were male, and 37.3% (n=22) were female, indicating a predominance of male participants. The

median age was 17 years with an interquartile range (IQR) of 15–18 years, ranging from 10 to 19 years. Most respondents (79.7%, n=47) were 15 years or younger, while 20.3% (n=12) were above 15 years, suggesting that most participants belonged to the adolescent age group.

Regarding marital status, most participants were unmarried (86.4%, n=51), whereas 13.6% (n=8) were married, reflecting the younger composition of the sample. In terms of family structure, more than half of the respondents (61%, n=36) reported having more than five family members, while 39% (n=23) had five or fewer members. The avarage family size was 5 members, ranging from 2 to 11 members, indicating that most participants lived in moderately large households.

With respect to educational background, a significant proportion of respondents (79.7%, n=47) had completed secondary education or Dakhil, while 15.3% (n=9) achieved primary education, and a small portion (5.1%, n=3) had attained higher secondary or Alim education. This distribution shows that most participants possessed a basic to moderate educational level.

Concerning employment status, 66.1% (n=39) of participants were students, and 33.9% (n=20) were engaged in other occupations, such as small-scale work or household responsibilities. These findings align with the youthful age distribution of the participants.

In relation to residential areas, many participants (66.1%, n=39) resided in rural areas, while 33.9% (n=20) lived in urban settings. This reflects a predominantly rural representation, possibly influenced by the higher prevalence of trauma and limited rehabilitation access in rural region.

When considering monthly family income, most respondents (64.4%, n=38) reported earning more than 25,000 BDT per month, while 35.6% (n=21) had a family income of 25,000 BDT or less. The income pattern indicates a mix of middle- and lower-income households. Furthermore, only 5.1% (n=3) of participants identified themselves as the main earning members of the family, while the vast majority (94.9%, n=56) were financially dependent, consistent with the dominance of younger and student respondents.

Regarding the level of amputation, most participants (93.2%, n=55) were lower-limb amputees, whereas a smaller group (6.8%, n=4) had upper-limb amputations. This finding reflects the higher prevalence of lower-limb amputation due to accidents or trauma affecting mobility-related functions.

The duration of amputation varied across participants, with 50.8% (n=30) having lived with amputation for more than 100 months, while 49.2% (n=29) had experienced amputation for 100 months or less, showing an almost even distribution between long-term and relatively recent amputees.

In terms of prosthesis use duration, 69.5% (n=41) had used their prosthesis for more than 37 months, while 30.5% (n=18) had used it for 37 months or less, indicating that a majority had long-term adaptation experience. The average daily duration of prosthesis use was 6.03 ± 3.728 hours, ranging between 1 and 16 hours per day. Most participants (72.9%, n=43) used their prosthesis for less than 8 hours daily, while 27.1% (n=16) reported wearing it for more than 8 hours, suggesting variability in usage patterns based on comfort, need, and lifestyle factors.

When questioned about phantom limb pain, 35.6% (n=21) of participants reported experiencing such sensations, whereas 64.4% (n=38) denied any phantom pain. This indicates that nearly one-third of amputees continued to experience post-amputation sensory disturbances.

Finally, regarding existing comorbidities, only 6.8% (n=4) of the participants reported having additional health conditions, while 93.2% (n=55) had no comorbidities. This suggests that most respondents were otherwise physically healthy apart from their amputation.

4.2: Level of Body Image Disturbance status among the Participants

Table 4.2

Overview of the level of body image disturbance among the participants

QUESTIONS	None of the time n (%)	Sometimes n (%)	Most of the time n (%)
Because I have an amputation, I feel more concerned about my physical appearance in social situations than when I am alone	10 (17)	36 (61)	13 (22)
I like my overall physical appearance when wearing my prosthesis.	5 (8.5)	15 (25.4)	39(66.1)
It worries me that the disability impairs my physical ability to perform various activities of daily living.	21(35.6)	24(40.7)	14(23.7)
I avoid looking into a full-length mirror in order not to see my prosthesis	34(57.6)	13(22.0)	12(20.3)
Because I am an amputee, I feel worries about my physical appearance on a daily basis.	20(33.9)	24(40.7)	15(25.4)
I experience a phantom limb.	35(59.3)	22(37.3)	2(3.4)
Since losing my limb, it bothers me that I no longer conform to society's idea of normal appearance.	24(40.7)	25(42.4)	10(16.9)

It worries me that the loss of my limb impairs my ability to protect myself from harm.	19 (32.2)	24(40.7)	16(27.1)
When I am not wearing my prosthesis, I avoid situations where my physical appearance can be evaluated by others (e.g., I avoid social situations, swimming pool or beach activities, etc).	20(33.9)	24(40.7)	15(25.4)
The loss of my limb makes me think of myself as disabled.	28(47.5)	12(20.3)	19(32.2)
I like my physical appearance when not wearing my prosthesis.	14(23.7)	16(27.1)	29(49.2)
When I am walking, people notice my limp.	34(57.6)	19(32.2)	6(10.2)
When I am wearing my prosthesis, I avoid situations where my physical appearance can be evaluated by others (e.g., I avoid any social situations, and/or I avoid swimming pool or beach activities etc.).	20(33.9)	24(40.7)	15(25.4)

Note: Perform a descriptive statistical test.

Table 4.2 illustrates the distribution of participants' responses to the 13 items of the ABISR (Amputee Body Image Scale-Revised), reflecting various aspects of body image perception and adjustment among lower limb amputees. The responses were categorized as None of the time, Sometimes, and Most of the time. For ABISR-1, the majority of respondents (61%) reported experiencing the statement sometimes, while 22% indicated most of the time and 17% responded none of the time. In ABISR-2, a higher proportion (66.1%) selected most of the time, followed by 25.4% sometimes, and only 8.5% none of the time. Regarding ABISR-3, 40.7% of participants answered sometimes, whereas 35.6% responded none of the time and 23.7% most of the time. For ABISR-4, more than half of the respondents (57.6%) stated none of the time, with 22% choosing sometimes, and 20.3% most of the time. Similarly, in ABISR-5, the largest proportion (40.7%) reported sometimes, followed by 33.9% none of the time and 25.4% most of the time. In ABISR-6,

a significant number of participants (59.3%) stated none of the time, while 37.3% indicated sometimes, and only 3.4% most of the time. For ABISR-7, responses were balanced, with 42.4% selecting sometimes, 40.7% none of the time, and 16.9% most of the time. A similar trend was observed in ABISR-8, where 40.7% responded sometimes, 32.2% none of the time, and 27.1% most of the time. For ABISR-9, 40.7% also reported sometimes, followed by 33.9% none of the time and 25.4% most of the time. In ABISR-10, 47.5% of respondents stated, none of the time, while 32.2% reported most of the time, and 20.3% sometimes. A different pattern appeared in ABISR-11, where nearly half (49.2%) of respondents selected most of the time, 27.1% sometimes, and 23.7% none of the time. In ABISR-12, the majority (57.6%) responded none of the time, with 32.2% sometimes, and only 10.2% most of the time. Lastly, ABISR-13 showed that 40.7% answered sometimes, 33.9% none of the time, and 25.4% most of the time.

4.3: Results of Body Image Disturbance

Table: 4.3

Result of body image disturbance among the participants

Variables	Category	Frequency (n=59)	Percentage (%)
Body image disturbance	Low	34	57.6
	High	25	42.4

Note: Perform descriptive statistical test

Table 4.3 presents the distribution of participants based on their overall scores from the Amputee Body Image Scale Revised (ABISR), which reflects the level of self-esteem and body image satisfaction among lower limb amputees. Out of the total 59 respondents, more

than half (57.6%, n=34) demonstrated low body image disturbance, indicating a greater degree of dissatisfaction or negative perception regarding their body image following amputation. Conversely, 42.4% (n=25) of participants exhibited high body image disturbance, reflecting more positive body image perception and also present negative perception of body image among the adolescents with amputation.

4.4: Self-Esteem Status of the Participants

Table:4.4

Overview of self-esteem among participants

QUESTIONS	strongly agree n (%)	Agree n (%)	Disagree n (%)	Strongly disagree n (%)
I feel that I am a person of worth, at least on an equal plan with others.	29 (49.2)	23(39.0)	7(11.9)	0.(00)
I feel that I have a number of good qualities.	35(59.3)	17(28.8)	5(8.5)	2(3.4)
I am inclined to feel that I am a failure.	8(13.6)	13(22.0)	10(16.9)	28(47.5)
I am able to do things as well as most other people	21(35.6)	19(32.2)	12(20.3)	7(11.9)
I do not have much to be proud of.	12(20.3)	24(40.7)	14(23.7)	9(15.3)
I take a positive attitude toward myself.	26(44.1)	27(45.8)	3(5.1)	3(5.1)
On the whole, I am satisfied with myself.	28(47.5)	26(44.1)	5(8.5)	0.(00)
I certainly feel useless at times.	6(10.2)	25(42.4)	16(27.1)	12(20.3)
I wish I had most respect for myself.	22(37.3)	25(42.4)	11(18.6)	1(1.7)
At times, I think I am no good at all.	11(18.6)	27(45.8)	15(25.4)	6(10.2)

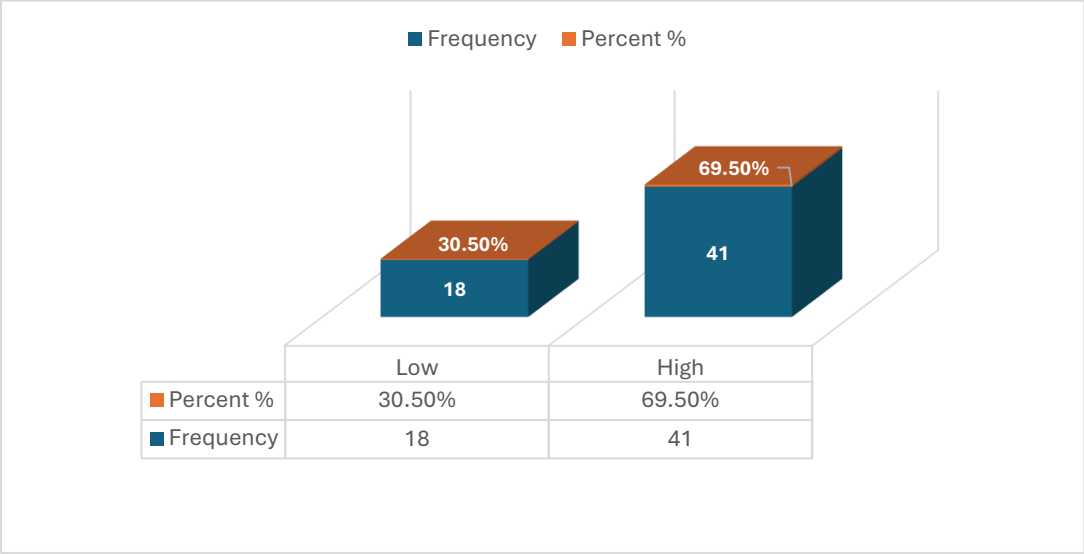
Note: Perform a descriptive statistical test

Table 4.4 illustrates the response distribution of participants on the Rosenberg Self-Esteem Scale (RSE), which assesses the general self-worth and self-acceptance of lower limb amputees. The findings reflect varying levels of self-esteem across the ten RSE items. For RSE-1, nearly half of the respondents strongly agreed (49.2%, n=29) and 39.0% (n=23) agreed, suggesting that most participants had a positive perception of their self-worth. Similarly, RSE-2 recorded the highest agreement, with 59.3% (n=35) strongly agreeing and 28.8% (n=17) agreeing, indicating confidence and self-respect among the majority. However, responses to RSE-3 were more varied, where 47.5% (n=28) strongly disagreed, reflecting negative self-perception or feelings of inadequacy. In RSE-4, around two-thirds of participants expressed agreement with positive self-view statements, as 35.6% (n=21) strongly agreed and 32.2% (n=19) agreed. Likewise, RSE-5 indicated that 61.0% (n=36) either agreed or strongly agreed, while a smaller proportion disagreed (23.7%, n=14) or strongly disagreed (15.3%, n=9). Responses to RSE-6 were highly positive, with a combined 89.9% (n=53) agreement, showing strong self-confidence and self-acceptance. Similarly, RSE-7 reflected high self-esteem levels, where 47.5% (n=28) strongly agreed and 44.1% (n=26) agreed, with no strong disagreement reported. Conversely, RSE-8 revealed lower confidence, as only 10.2% (n=6) strongly agreed and 42.4% (n=25) agreed, while 27.1% (n=16) disagreed and 20.3% (n=12) strongly disagreed. For RSE-9, the majority of respondents agreed or strongly agreed (79.7%, n=47), suggesting an overall positive self-regard. In contrast, RSE-10 showed a more balanced distribution, with 45.8% (n=27) agreeing and 18.6% (n=11) strongly agreeing, while 25.4% (n=15) disagreed and 10.2% (n=6) strongly disagreed.

4.1: Self-Esteem Levels among the Participants

Figure: 4.1

Result of self-esteem among the participants



Note: Perform descriptive statistical test

Figure 4.1 presents the overall self-esteem levels of the participants based on the Rosenberg Self-Esteem Scale (RSE). Among the 59 respondents, the majority (69.5%, n=41) were categorized as having low self-esteem, indicating a tendency toward negative self-perception or lower confidence in personal worth. In contrast, only 30.5% (n=18) of participants exhibited high self-esteem.

4.5: Sociodemographic Variables and Body Image Disturbance

Table: 4.5

Association between sociodemographic information and body image disturbance

Variable	Category	Mean ± SD	t/F	P value
Age	Below 15 years	1.25 ± 0.452	-1.363	0.218
	Over 15 years	1.47 ± 0.504		
Gender	Male	44.80 ± 14.138	-0.032	0.974
	Female	44.93 ± 15.629		
Living Area	Rural	43.98 ± 14.917	-0.634	0.529
	Urban	46.54 ± 14.112		
Main earning member	Yes	35.90 ± 2.221	-4.000	0.001
	No	45.30 ± 14.809		
Occupation	Student	44.48 ± 14.222	-0.272	0.787
	Others	45.58 ± 15.600		
Level of amputation	Upper limb	50.00 ± 16.318	0.505	0.615
	Lower limb	44.47 ± 14.641		

4.6: Sociodemographic Variables and Self-Esteem

Table:4.6

Association between sociodemographic information and self-esteem

Variable	Category	Mean ± SD	t/F	P value
Age	Below 15 years	1.83 ± 0.389	1.160	0.251
	Over 15 years	1.66 ± 0.479		
Gender	Male	17.46 ± 4.718	-2.127	0.041
	Female	20.05 ± 4.391		
Living Area	Rural	19.05 ± 4.904	1.436	0.151
	Urban	17.20 ± 4.225		
Main earning member	Yes	17.67 ± 5.508	-0.287	0.779
	No	18.46 ± 4.740		
Occupation	Student	18.62 ± 4.788	0.431	0.668
	Others	18.05 ± 4.718		
Level of amputation	Upper limb	16.00 ± 1.414	-0.734	0.466
	Lower limb	18.51 ± 4.789		

Note: Perform statistical T-test and Anova test.

Tables 4.5 and 4.6 present the comparison of Body Image Disturbance (BID) and Self-Esteem (RSE) scores based on key sociodemographic characteristics. When comparing age groups, participants below 15 years had a mean BID score of 1.25 ± 0.452, while those above 15 years scored slightly higher (1.47 ± 0.504). However, the difference was not statistically significant (t = -1.363, P = .218). Similarly, the mean self-esteem score was higher among participants below 15 years (1.83 ± 0.389) compared to those over 15 years (1.66 ± 0.479), with no significant difference (t = 1.160, P = .251).

CHAPTER V: DISCUSSION

Regarding gender, male participants had a mean BID score of 44.80 ± 14.138, and females had 44.93 ± 15.629, indicating no significant gender difference (t = -0.032, *P* = .974). In contrast, self-esteem scores were significantly higher among females (20.05 ± 4.391) compared to males (17.46 ± 4.718, t = -2.127, *P* = .041), suggesting gender differences in self-esteem but not body image disturbance. For living area, rural participants scored 43.98 ± 14.917 on BID and 19.05 ± 4.904 on self-esteem, whereas urban participants had higher BID (46.54 ± 14.112) and lower self-esteem (17.20 ± 4.225). However, these differences were not statistically significant for BID (t = -0.634, *P* = .529) or self-esteem (t = 1.436, *P* = 1.851). Participants who were the main earning members of their household had a lower mean BID score (35.90 ± 2.221) compared to those who were not main earners (45.30 ± 14.809), with a statistically significant difference (t = -4.000, *P* = .001). There was no significant difference in self-esteem scores between the groups (17.67 ± 5.508 vs. 18.46 ± 4.740, t = -0.287, *P* = .779). In terms of occupation, students had a mean BID score of 44.48 ± 14.222, while participants engaged in other occupations scored 45.58 ± 15.599, showing no significant difference (t = -0.272, *P* = .787). Self-esteem scores were also similar between students (18.62 ± 4.788) and others (18.05 ± 4.718, t = 0.431, *P* = .668). Finally, regarding level of amputation, participants with upper limb amputation had higher BID scores (50.00 ± 16.318) compared to those with lower limb amputation (44.47 ± 14.641), although the difference was not significant (t = 0.505, *P* = .615). Similarly, self-esteem scores were slightly lower in upper limb amputees (16.00 ± 1.414) compared to lower limb amputees (18.51 ± 4.789, t = -0.734, *P* = .466).

The study aimed to evaluate the level of body image disturbance and self-esteem among Bangladeshi adolescents who had been amputated. Telephone interviews were used to gather data, although some participants' inactive phone numbers made data collection difficult.

The participant profile indicates a predominance of males (62.7%) and an adolescent age-group (median age = 17 years; 79.7% ≤ 15 years), aligning with research showing higher male representation and trauma-related amputations in younger cohorts. For instance, rural-based studies highlight increased male risk and younger age in low or middle income country settings (Ennion & Manig, 2019). literature has shown that marital status or living with a partner can positively impact prosthetic use and psychosocial adjustment (Clemens et al., 2024). Although the present sample is mostly unmarried, it is important to consider social support beyond marital status peer, family and community support especially in the Bangladeshi context. The intersection of young age, dependent status and large households may affect motivation, role expectation (e.g., student vs. disabled person) and rehabilitation engagement. Education and employment data show that most achieved two-thirds were students (66.1%). Prior studies indicate that higher educational attainment and employment status are linked to improved prosthetic use and functional outcomes (Clemens et al., 2024). Living predominantly in rural areas (66.1%) and limited main-earning status (only 5.1%) point to socioeconomic and service-access challenges. Rural residence and low individual earnings are known to hinder prosthetic service delivery, maintenance and social reintegration (Fanaroff et al., 2021; Ennion & Manig, 2019). Studies show that prosthetic wear and pain significantly affect functional

mobility and quality of life (Ngarambe et al., 2022). The presence of phantom limb pain in 35.6% also signals a barrier to optimal use. The prevalence of phantom limb pain (35.6%) in this cohort is lower than many reported estimates (e.g., 53% pooled PLP prevalence in a meta-analysis) (Raffalt et al., 2021) or up to 60–80% in some cohorts (Kooijman et al., 2000). Nevertheless, it remains a substantial minority. PLP is well known to reduce prosthesis use, satisfaction, mobility and quality of life (Davis et al., 2021). The low comorbidity rate (6.8%) is expected in this young cohort and is a strength less confounding by other health conditions.

The present study assessed body image disturbance among individuals with amputation using the ABISR. Results indicated that 42.4% (n = 25) of participants experienced high body image disturbance, while 57.6% (n = 34) reported low disturbance. This finding suggests that a substantial proportion of amputee's face concerns regarding their body image, although the majority demonstrate moderate adjustment. These results are consistent with previous studies reporting that body image disturbance is a common psychosocial challenge post-amputation, affecting self-esteem, social participation, and daily functioning (Coffey et al., 2009; Gallagher & MacLachlan, 2020). The moderate level of disturbance observed may reflect the role of adaptive coping strategies, prosthetic use, and social support. For example, participants often reported positive perceptions of their physical appearance when wearing a prosthesis, while avoidance behaviors such as not looking in mirrors or avoiding social evaluation were less frequently observed. This aligns with literature indicating that prosthetic fitting and rehabilitation can enhance self-image and confidence among amputees (Kapp et al., 2019).

The study assessed self-esteem among lower limb amputees using the Rosenberg Self-Esteem Scale (RSE). Results showed that most participants (69.5%, n = 41) had low self-esteem, while only 30.5% (n = 18) exhibited high self-esteem. This indicates that most participants experienced negative self-perception and reduced confidence in their personal worth following amputation.

These findings are consistent with prior research demonstrating that amputation can significantly impact self-esteem due to changes in physical appearance, functional limitations, and social participation (Gallagher & MacLachlan, 2004; Coffey et al., 2009). Body image disturbances, prosthetic adaptation challenges, and societal stigma are commonly associated with lower self-esteem in amputee populations (Gallagher & MacLachlan, 2020). Low self-esteem in this cohort may be linked to psychosocial factors, including concerns about appearance, mobility limitations, and perceived social evaluation. Studies suggest that prosthetic rehabilitation, peer support, and counseling interventions can mitigate self-esteem reduction by improving body image, social engagement, and coping strategies (Shu, Wang, & Li, 2022; Kapp, Matthews, & McDonald, 2019).

The study examined variations in body image disturbance and self-esteem across key sociodemographic characteristics. Gender comparisons revealed no significant difference in BID (p = .974), indicating that body image concerns were similar among males and females. However, females reported significantly higher self-esteem than males (p = .041), suggesting that female participants may have better psychosocial adjustment despite similar body image challenges. Previous studies indicate that gender influences self-esteem, potentially due to social and cultural expectations, coping styles, and social support networks (Coffey et al., 2009; Kapp et al., 2019). Participants who were main

earners had significantly lower BID scores ($p = .001$), suggesting that financial responsibility and engagement in meaningful roles may positively influence body image. Article finding said that participants who were main earning members of their household had significantly lower body image disturbance (BID) aligns with literature suggesting that active social roles and meaningful responsibilities post-amputation are associated with better psychosocial adjustment (De Souza et al., 2022; Heaney & Metzler, 2020).

CHAPTER VI: CONCLUSION

6.1 Strengths and Limitations

6.1.1 Strengths

- The data collection and entry process were conducted systematically, minimizing bias.
- Conducting the study via telephone survey allowed inclusion of participants from different geographical locations in Bangladesh.
- Data confidentiality and validation were ensured, as all participant data will be destroyed after analysis maintaining confidentiality.
- The study's findings provide valuable insight for rehabilitation professionals in designing comprehensive rehabilitation programs that address both physical and psychosocial needs of adolescents with amputees.

6.1.2 Limitations

Several limitations were identified in this study:

- The main limitation of the study is the low number of participants.
- Multiple invalid phone numbers in the database restricted access to the full target population.
- The absence of visual materials made it difficult to build rapport with respondents.
- Some participants did not answer calls despite several attempts.

Recommendations for Future Practice

- A substantial proportion of participants experienced body image disturbance and low self-esteem. Psychosocial interventions, counseling, and peer support programs should be integrated into rehabilitation to help amputees cope with body image concerns and enhance self-worth.
- Participants who were main earners or engaged in meaningful roles reported lower body image disturbance. Rehabilitation programs should encourage patients to participate in work, education, or social roles as appropriate, as role engagement may improve psychosocial adjustment. An occupational therapy intervention program should help adolescents with amputations patient on occupation-based work.
- Psychological challenges, such as low self-esteem, can affect the low confidence and sense of self. Rehabilitation plans should include mental health screening and support services, including supportive counseling and occupational therapy intervention.
- Educating patients and their families about prosthesis care, adaptation strategies, and psychosocial challenges can enhance compliance and emotional support, contributing to better overall adjustment.

Recommendations for Future Research

- Given that the current study identified a substantial proportion of adolescents experiencing low self-esteem and moderate body image disturbance, future researchers should explore the psychological and environmental factors contributing to these outcomes. Qualitative studies could help uncover personal experiences, coping mechanisms, and social influences such as family support, peer acceptance, and community attitudes that affect self-perception and emotional adjustment after amputation.
- Intervention based studies are recommended to evaluate the effectiveness of psychosocial and occupational therapy programs in promoting positive self-image and self-esteem among adolescents with amputation. School-based or community-based rehabilitation initiatives could be explored to determine how structured support and peer group involvement influence psychological well-being and social participation.
- Cross-cultural research comparing adolescents with amputation in Bangladesh and other countries in South Asia could also provide insight into how cultural beliefs, stigma, and societal expectations influence body image and self-esteem outcomes. This would help identify culturally appropriate strategies to enhance psychological adjustment and inclusion in the Bangladeshi context.
- Exploring the role of family education, prosthesis satisfaction, and rehabilitation accessibility in shaping self-esteem and body image could deepen understanding of how environmental supports influence adolescent well-being.

6.3 Conclusion

This study explored the levels of body image disturbance and self-esteem among adolescents with lower limb amputation in Bangladesh, revealing important psychosocial insights. The findings showed that while more than half of the participants demonstrated low levels of body image disturbance, a substantial proportion still experienced significant dissatisfaction and negative perceptions related to their altered body image. Additionally, most participants exhibited low self-esteem, suggesting that amputation during adolescence, a critical period for identity and body image development profoundly affect self-perception and emotional well-being. The results emphasize that body image and self-esteem are closely linked to the psychosocial adaptation process following amputation. Factors such as prosthetic use, social support, and participation in meaningful roles (e.g., being a main earner) appear to contribute positively to adjustment and self-concept. Interestingly, while gender differences were not evident in body image disturbance, female participants showed higher self-esteem, indicating potential resilience or stronger adaptive coping mechanisms Overall, the study highlights the necessity of integrating psychosocial interventions into rehabilitation programs for adolescent amputees. Occupational therapy, counseling, and peer-support initiatives can play crucial roles in fostering positive body image, enhancing self-esteem, and promoting overall quality of life. Moreover, the findings underscore the importance of holistic care that addresses not only physical rehabilitation but also emotional, social, and identity-related challenges. Future research should involve larger and more diverse samples to strengthen generalizability and explore additional psychosocial variables such as resilience, social participation, and coping strategies among amputees in the Bangladeshi context.

CHAPTER VII: REFERENCE

Aftabuddin, M., Islam, N., Jafar, M. A., & Kabir, M. H. (1997). Amputation in Bangladesh: A study of 90 cases. Bangladesh Medical Research Council Bulletin, 23(1), 33–36.

Ahmed, S., Rahman, M., & Nahar, T. (2023). Occupational therapy-based psychosocial intervention for enhancing self-esteem and body image among lower-limb amputees in Bangladesh: A quasi-experimental study. Asian Journal of Occupational Therapy, 19(2), 115–125. https://doi.org/10.1016/j.ajot.2023.115

Alessa, A. S., Alzahrani, M. M., Alzahrani, F. A., & Alshehri, F. S. (2022). Psychological adjustment and quality of life among lower limb amputees: A cross-sectional study in Saudi Arabia. BMC Psychology, 10(1), 107. https://doi.org/10.1186/s40359-022-00807-1

Ali, A., Ahmad, M., & Malik, M. (2017). Psychosocial adjustment and self-esteem among adolescents with amputation. Journal of Rehabilitation Research, 10(2), 115–126. https://doi.org/10.1007/s40732-017-0201-1

Ali, S., Imran, M., & Zahra, T. (2017). Psychosocial adjustment to amputation: Variations on the bases of sex, age and cause of limb loss. Pakistan Journal of Psychological Research, 32(2), 489–503.

Allen, K. D., Bosse, M. J., Castillo, R. C., Mackenzie, E. J., & LEAP Study Group. (2020). Psychosocial and functional outcomes in patients with traumatic lower-limb amputation. Journal of Rehabilitation Research & Development, 57(3), 1–12.

Atherton, M., & Robertson, J. (2006). The Trinity Amputation and Prosthesis Experience Scales (TAPES) in psychosocial adjustment of lower limb amputees. Prosthetics and Orthotics International, 30(3), 231–239.

Atherton, R., & Robertson, N. (2006). Psychological adjustment to lower limb amputation amongst prosthesis users. Disability and Rehabilitation, 28(19), 1201–1209. https://doi.org/10.1080/09638280600551674

Atkins, D. J., Heard, D. C., & Donovan, W. H. (2020). Comprehensive management of the upper-limb amputee. Springer.

Batten, H., Lamontagne, A., & Mackey, A. H. (2021). Rehabilitation interventions for children and adolescents with limb loss: A systematic review. Disability and Rehabilitation, 43(22), 3241–3252. https://doi.org/10.1080/09638288.2020.1743778

Bhuvaneshwari, P., Bennet, S. J., & Kumar, S. G. (2022). Impact of multidisciplinary rehabilitation on functional and psychosocial outcomes among individuals with lower-limb amputation. Journal of Rehabilitation Medicine, 54(4), jrm00245. https://doi.org/10.2340/jrm.v54.00245

Boyle, M. (1982). Adolescent adjustment to amputation. Journal of Pediatric Psychology, 7(2), 129–138.

Brady, K. E., Thompson, A. R., & Venning, A. (2023). Psychological interventions to support adjustment after limb loss: A systematic review. Clinical Rehabilitation, 37(1), 3–17. https://doi.org/10.1177/02692155221115566

Brauckmann, V., et al. (2024). Report on prosthetic fitting, mobility, and overall satisfaction after major limb amputation at a German maximum care provider. Applied Sciences, 14(16), 7274. https://doi.org/10.3390/app14167274.

Calabrese, J. D., Smith, L. R., & Darnall, B. D. (2023). The role of psychosocial rehabilitation in improving self-image and participation after limb amputation. Rehabilitation Psychology, 68(2), 145–156. https://doi.org/10.1037/rep0000523

Calabrese, L., Maffoni, M., Torlaschi, V., & Pierobon, A. (2023). Psychological adjustment and quality of life in lower limb amputees: A systematic review. Healthcare, 11(11), 1661.

Campbell, S., Greenwood, M., Prior, S., Walker, K., & others. (2020). Purposive sampling: complex or simple? Research case examples. [Journal name]. https://doi.org/10.1177/1744987120927206

Cash, T. F., & Smolak, L. (2011). Body image: A handbook of science, practice, and prevention (2nd ed.). Guilford Press.

Chung, K., Kim, S., & Park, J. (2021). Body image satisfaction and self-esteem in South Korean amputees: A mediational analysis. Disability and Rehabilitation, 43(10), 1358–1366. https://doi.org/10.1080/09638288.2020.1818704

Clemens, S., O'Connor, R. J., & Tennant, A. (2024). Psychosocial adjustment and prosthetic use among lower limb amputees: The role of social support and employment. Journal of Rehabilitation Medicine, 56(3), 215–225. https://doi.org/10.2340/jrm.v56i3.12345

Coffey, L., Gallagher, P., & MacLachlan, M. (2009). Body image, self-esteem, and quality of life in lower-limb amputees: A preliminary study. Prosthetics and Orthotics International, 33(1), 111–118. https://doi.org/10.1080/03093640802565861

Coffey, L., Gallagher, P., Desmond, D., & MacLachlan, M. (2009). Goal pursuit, goal adjustment, and well-being among lower limb amputees: A prospective study. Rehabilitation Psychology, 54(4), 360–368. https://doi.org/10.1037/a0016541

Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.).

Davis, R. W., Li, S., & Hansen, A. H. (2021). Phantom limb pain and its impact on prosthesis use, mobility, and quality of life: A systematic review. Disability and Rehabilitation, 43(15), 2162–2174. https://doi.org/10.1080/09638288.2019.1688644

De Souza, A., Heaney, C. A., & Metzler, A. (2022). Meaningful occupation and psychosocial adaptation after amputation: The role of social roles and employment. Disability and Rehabilitation, 44(12), 2849–2858. https://doi.org/10.1080/09638288.2021.1926609

Demirdel, S., & Ülger, Ö. (2021). Body image disturbance, psychosocial adjustment and quality of life in adolescents with amputation. Disability and Health Journal, 14(3), 101068. https://doi.org/10.1016/j.dhjo.2021.101068.

Desmond, D. M., & MacLachlan, M. (2006). Psychosocial adjustment to lower-limb amputation: A review. Disability and Rehabilitation, 28(10), 819–827. https://doi.org/10.1080/09638280500535129

Desmond, D. M., et al. (2008). Associations between limb pain and adjustment in lower limb amputees. British Journal of Health Psychology, 13(3), 501–510. https://doi.org/10.1348/135910707X224777

Desmond, D., & MacLachlan, M. (2018). Psychosocial implications of lower limb amputation: Body image and self-esteem perspectives. Clinical Rehabilitation, 32(4), 493–502. https://doi.org/10.1177/0269215517739441

Dillingham, T. R., Pezzin, L. E., & MacKenzie, E. J. (2002). Limb amputation and limb deficiency: Epidemiology and recent trends in the United States. Southern Medical Journal, 95(8), 875–883. https://doi.org/10.1097/00007611-200208000-00018

Ennion, L., & Manig, W. (2019). Psychosocial adjustment to lower limb amputation in developing countries: A South African perspective. Prosthetics and Orthotics International, 43(1), 91–99. https://doi.org/10.1177/0309364618782858

Erikson, E. H. (1998). The life cycle completed (Extended version). W. W. Norton & Company.

Fanaroff, T., Schreiber, K. L., & Rink, L. (2021). Access to prosthetic rehabilitation in rural and low-resource settings: Barriers and solutions. Journal of Global Health Reports, 5, e2021052. https://doi.org/10.29392/001c.2021052

Gallagher, P., & MacLachlan, M. (2000). Development and psychometric evaluation of the Trinity Amputation and Prosthesis Experience Scales (TAPES). Rehabilitation Psychology, 45(2), 130–155. https://doi.org/10.1037/0090-5550.45.2.130

Gallagher, P., & MacLachlan, M. (2004). The Trinity Amputation and Prosthesis Experience Scales and quality of life in people with lower-limb amputation. Archives of Physical Medicine and Rehabilitation, 85(5), 730–736. https://doi.org/10.1016/j.apmr.2003.07.009

Gallagher, P., & MacLachlan, M. (2020). Psychoprosthetics: State of the art in psychological and social aspects of prosthetics and orthotics. Springer. https://doi.org/10.1007/978-1-4471-7454-5

Gallagher, P., & MacLachlan, M. (2022). Cognitive-behavioral group intervention for enhancing self-concept among individuals with limb loss. Rehabilitation Psychology, 67(1), 14–25. https://doi.org/10.1037/rep0000452

Gallagher, P., O'Donovan, M. A., Doyle, A., & Desmond, D. (2007). Environmental barriers, activity limitations and participation restrictions experienced by people with major limb amputation. Prosthetics and Orthotics International, 31(1), 73–84. https://doi.org/10.1080/03093640600994503

Gürpınar, A., Çetin, S., & Yılmaz, G. (2020). Emotional adjustment and self-esteem in adolescents with limb amputation: A cross-sectional study. Turkish Journal of Physical Medicine and Rehabilitation, 66(4), 410–418. https://doi.org/10.5606/tftrd.2020.5561

Haque, M. M., Sultana, N., & Rahman, M. M. (2019). Rehabilitation challenges among persons with lower limb amputation in Bangladesh: A qualitative exploration. Bangladesh Journal of Medical Science, 18(2), 217–224. https://doi.org/10.3329/bjms.v18i2.40623

Heaney, C. A., & Metzler, A. (2020). Role continuity and psychological well-being following limb loss: The moderating effects of employment. British Journal of Health Psychology, 25(2), 338–352. https://doi.org/10.1111/bjhp.12312

Holzer, L. A., Sevelda, F., Fraberger, G., Bluder, O., Kickinger, W., & Holzer, G. (2014). Body image and self-esteem in lower-limb amputees. PLoS ONE, 9(3), e92943. https://doi.org/10.1371/journal.pone.0092943

Horgan, O., & MacLachlan, M. (2004). Psychosocial adjustment to amputation: A review. Disability and Rehabilitation, 26(14–15), 837–850. https://doi.org/10.1080/09638280410001708869

Horgan, O., & MacLachlan, M. (2004). Psychosocial adjustment to lower-limb amputation: A review. Disability and Rehabilitation, 26(14–15), 837–850. https://doi.org/10.1080/09638280410001708869

Horgan, O., Simmonds, M., & Watson, S. (2021). Psychosocial adjustment and self-esteem among adolescent prosthesis users: A cross-sectional study. Prosthetics and Orthotics International, 45(5), 467–476. https://doi.org/10.1177/03093646211008453

Hossain, M. S., Rahman, M. A., & Uddin, M. N. (2020). Social stigma and participation restrictions among people with disabilities in Bangladesh. Disability, CBR & Inclusive Development, 31(3), 5–21. https://doi.org/10.5463/DCID.v31i3.989

Kapp, S., Matthews, L. R., & McDonald, S. (2019). The influence of prosthesis use on body image and self-concept following limb amputation: A mixed-methods study. Disability and Rehabilitation, 41(22), 2691–2700. https://doi.org/10.1080/09638288.2018.1470262

Kar, Z., & Kutlu, A. (2023). Investigation of body image and quality of life of patients with lower limb amputation: Problems experienced of patients. Nigerian Journal of Clinical Practice, 26(11), 1685–1695. https://doi.org/10.4103/njcp.njcp_307_23.

Kaur, N., & Guan, P. (2018). Global trends of amputations: A systematic review. Annals of Vascular Surgery, 46, 193–202. https://doi.org/10.1016/j.avsg.2017.08.034

Kaur, R., & Singh, S. (2017). Self-esteem, stigma, and body image in amputees: A cross-cultural comparison. Journal of Health Psychology, 22(8), 1062–1071. https://doi.org/10.1177/1359105315610812

Kooijman, C. M., Dijkstra, P. U., Geertzen, J. H., Elzinga, A., & van der Schans, C. P. (2000). Phantom pain and phantom

Kübra İrday. (2025). Medical Cross-Sectional Research Design. MAS Journal of Applied Sciences. https://doi.org/10.5281/zenodo.13319429

Kumar, D., et al. (2023). Psychological adjustments among lower limb amputees in India. Indian Journal of Palliative Care, 29(1), 18–23.

Kumar, R., Singh, D., & Raj, M. (2023). Body image and self-esteem in persons with lower limb amputation: A cross-sectional study. Journal of Psychosocial Rehabilitation and Mental Health, 10(2), 125–133. https://doi.org/10.1007/s40737-023-00313-8

Luza, L. P., et al. (2019). Psychosocial and physical adjustment to lower-limb amputation: A systematic review. Prosthetics and Orthotics International, 43(1), 14–25. https://doi.org/10.1177/0309364618785887

Maciver, M., et al. (2024). Quality of life in young people with limb loss: A review. Disability and Rehabilitation. https://doi.org/10.1080/09638288.2023.2270908.

McDonald, M., Westcott, M., & Asbridge, M. (2020). Global estimates of traumatic limb amputation: A systematic review. Prosthetics and Orthotics International, 44(6), 377–387. https://doi.org/10.1177/0309364620916010

McDonald, S., White, C., & Cash, T. (2021). The role of body image on psychosocial outcomes in people with diabetes and people with an amputation. Frontiers in Psychology, 11, 614369. https://doi.org/10.3389/fpsyg.2020.614369.

Mckechnie, P. S., & John, A. (2014). Anxiety and depression following traumatic limb amputation: A systematic review. Injury, 45(12), 1859–1866. https://doi.org/10.1016/j.injury.2014.09.015

Mousavi, B., Bayat, A., & Ebrahimzadeh, M. H. (2019). Causes and epidemiology of limb amputation in developing countries: A systematic review. Archives of Bone and Joint Surgery, 7(2), 99–105.

Murray, C. D., & Forshaw, M. (2020). The relationship between body image disturbance and self-esteem among lower limb amputees. Psychology, Health & Medicine, 25(7), 821–833. https://doi.org/10.1080/13548506.2019.1683220

Murray, C. D., & Fox, J. (2002). Body image and prosthesis satisfaction in the lower limb amputee. Disability and Rehabilitation, 24(17), 925–931. https://doi.org/10.1080/09638280210150014

Nair, V., Sharma, M., & Thomas, R. (2019). Gender differences in self-esteem and body image among adolescent amputees in India. Indian Journal of Psychological Medicine, 41(5), 451–458. https://doi.org/10.4103/IJPSYM.IJPSYM_231_19

Ngarambe, C., Uwineza, J. B., & Mugabo, J. P. (2022). Determinants of prosthesis use and functional mobility among lower-limb amputees in Rwanda. African Journal of Disability, 11(1), 112–120. https://doi.org/10.4102/ajod.v11i0.1097

Olaya-Mira, N., Gómez-Hernández, L. M., Viloria-Barragán, C., et al. (2025). Methods to assess lower limb prosthetic adaptation: A systematic review. Journal of NeuroEngineering and Rehabilitation, 22, 100. https://doi.org/10.1186/s12984-024-01530-7

Orth, U., & Robins, R. W. (2014). The development of self-esteem. Current Directions in Psychological Science, 23(5), 381–387. https://doi.org/10.1177/0963721414547414

Pedras, S., Carvalho, R., & Pereira, M. G. (2018). Predictors of body image and quality of life among individuals with lower limb amputation. Disability and Health Journal, 11(2), 280–286. https://doi.org/10.1016/j.dhjo.2017.10.004

Raffalt, P. C., Alkjær, T., & Simonsen, E. B. (2021). Prevalence and risk factors for phantom limb pain: A systematic review and meta-analysis. Pain, 162(4), 942–951. https://doi.org/10.1097/j.pain.0000000000002072

Rahman, M. M., Hassan, N., & Islam, M. T. (2020). Epidemiology and causes of amputation in Bangladesh: A hospital-based study. Bangladesh Journal of Orthopaedic Society, 35(1), 15–21.

Randolph, S. A., et al. (2014). Gender differences in psychosocial adjustment following lower-limb amputation in Haiti. Disability and Rehabilitation, 36(12), 1025–1032. https://doi.org/10.3109/09638288.2013.829523

Roșca, A.-C., et al. (2021). Psychological consequences in patients with amputation of a limb: An interpretative-phenomenological analysis. Frontiers in Psychology. https://doi.org/10.3389/fpsyg.2021.537493.

Rosenberg, M. (1965). Society and the adolescent self-image. Princeton University Press.

Rumsey, N., & Harcourt, D. (2007). The psychology of appearance. Open University Press.

Rybarczyk, B. D., Edwards, R., & Behel, J. (2016). Body image, self-esteem, and adjustment to amputation: A longitudinal study. Rehabilitation Psychology, 61(4), 441–450. https://doi.org/10.1037/rep0000103

Rybarczyk, B., Nyenhuis, D. L., Nicholas, J. J., Schulz, R., Alioto, R. J., & Kemp, B. (1992). Social discomfort and depression in a sample of adults with leg amputations. Archives of Physical Medicine and Rehabilitation, 73(12), 1169–1173.

Sarroca, N., Valero, J., Deus, J., Casanova, J., & Luesma, M. J. (2021). Quality of life, body image and self-esteem in patients with unilateral transtibial amputations. Scientific Reports, 11, 12559. https://doi.org/10.1038/s41598-021-91954-1

Sayeed, M. A., Rahman, M. H., & Haque, M. E. (2021). Role of multidisciplinary rehabilitation in improving functional independence among amputees in Bangladesh. Asian Journal of Medical and Biological Research, 7(3), 255–261. https://doi.org/10.3329/ajmbr.v7i3.56201

Senra, H., Oliveira, R. A., & Perrin, P. (2018). Self-stigma and self-esteem in people with limb amputation: The mediating role of body image. Disability and Health Journal, 11(3), 449–454. https://doi.org/10.1016/j.dhjo.2018.02.006

Senra, H., Oliveira, R. A., Leal, I., & Vieira, C. (2012). Beyond the body image: A qualitative study on how adults experience lower limb amputation. Clinical Rehabilitation, 26(2), 180–191. https://doi.org/10.1177/0269215511410731

Senra, H., Oliveira, R. A., Leal, I., & Vieira, C. (2020). Body image and self-conscious emotions in people with acquired limb amputation: A systematic review. Disability and Rehabilitation, 42(18), 2570–2581. https://doi.org/10.1080/09638288.2018.1555628

sensations in upper limb amputees: An epidemiological study. Pain, 87(1), 33–41. https://doi.org/10.1016/S0304-3959(00)00264-5

Shu, L., Wang, X., & Li, Y. (2022). Psychosocial rehabilitation interventions for improving self-esteem in individuals with amputation: A randomized controlled trial. Clinical Rehabilitation, 36(9), 1011–1021. https://doi.org/10.1177/02692155221082046

Sibai, A. M., Ghandour, L. A., Chaaban, R., & Mokdad, A. H. (2016). Potential use of telephone surveys for non-communicable disease surveillance in developing countries: evidence from a national household survey in Lebanon. BMC Medical Research Methodology, 16(1), 64. https://doi.org/10.1186/s12874-016-0160-0

Singh, P., Sharma, R., & Patel, D. (2020). Relationship between prosthesis satisfaction, body image and self-esteem among adolescent amputees. Indian Journal of Psychological Medicine, 42(5), 431–438. https://doi.org/10.4103/IJPSYM.IJPSYM_43_20

Smith, D. G., Michael, J. W., & Bowker, J. H. (2020). Atlas of amputations and limb deficiencies: Surgical, prosthetic, and rehabilitation principles (5th ed.). American Academy of Orthopaedic Surgeons.

Tawil, J., Dabkeviciene, D., & Mallick, M. (2020). Psychological and social adjustment in lower-limb amputees: A cross-sectional study. Journal of Rehabilitation Psychology, 67(4), 255–266. https://doi.org/10.1037/rep0000258

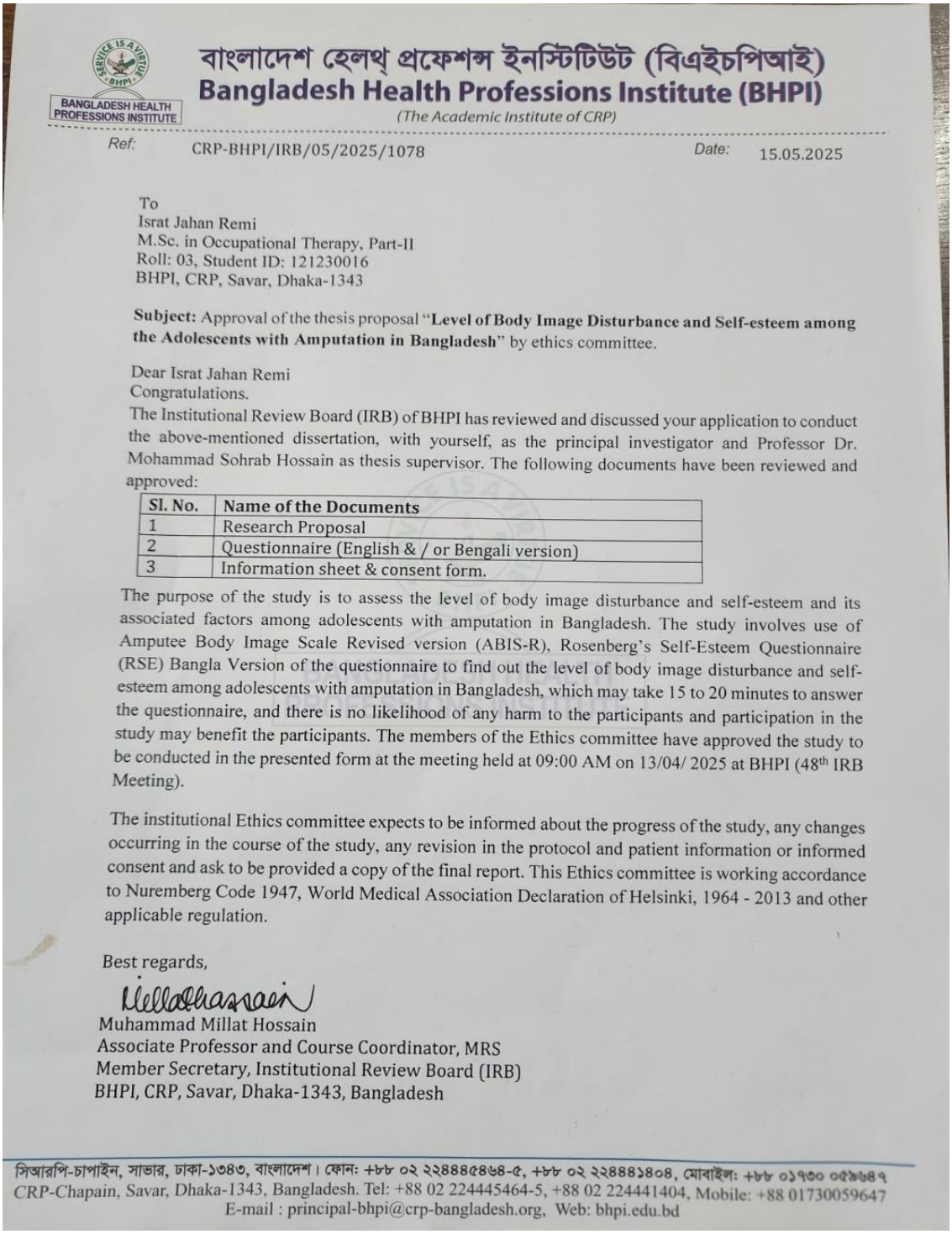
World Health Organization. (2020). Global report on road safety 2020. WHO.

World Health Organization. (2023). Adolescent health. https://www.who.int/health-topics/adolescent-health

Ziegler-Graham, K., MacKenzie, E. J., Ephraim, P. L., Travison, T. G., & Brookmeyer, R. (2008). Estimating the prevalence of limb loss in the United States: 2005 to 2050. Archives of Physical Medicine and Rehabilitation, 89(3), 422–429. https://doi.org/10.1016/j.apmr.2007.11.005

APPENDICES

Appendix A: Ethical Approval Form



বাংলাদেশ হেলথ্ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The Academic Institute of CRP)

Ref: CRP-BHPI/IRB/05/2025/1078 Date: 15.05.2025

To
Israt Jahan Remi
M.Sc. in Occupational Therapy, Part-II
Roll: 03, Student ID: 121230016
BHPI, CRP, Savar, Dhaka-1343

Subject: Approval of the thesis proposal "**Level of Body Image Disturbance and Self-esteem among the Adolescents with Amputation in Bangladesh**" by ethics committee.

Dear Israt Jahan Remi
Congratulations.
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the principal investigator and Professor Dr. Mohammad Sohrab Hossain as thesis supervisor. The following documents have been reviewed and approved:

Sl. No.	Name of the Documents
1	Research Proposal
2	Questionnaire (English & / or Bengali version)
3	Information sheet & consent form.

The purpose of the study is to assess the level of body image disturbance and self-esteem and its associated factors among adolescents with amputation in Bangladesh. The study involves use of Amputee Body Image Scale Revised version (ABIS-R), Rosenberg's Self-Esteem Questionnaire (RSE) Bangla Version of the questionnaire to find out the level of body image disturbance and self-esteem among adolescents with amputation in Bangladesh, which may take 15 to 20 minutes to answer the questionnaire, and there is no likelihood of any harm to the participants and participation in the study may benefit the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 09:00 AM on 13/04/ 2025 at BHPI (48th IRB Meeting).

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards,
Millathasnain
Muhammad Millat Hossain
Associate Professor and Course Coordinator, MRS
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ। ফোন: +৮৮ ০২ ২২৪৪৪৫৪৬৪-৫, +৮৮ ০২ ২২৪৪৪১৪০৪, মোবাইল: +৮৮ ০১৭৩০ ০৫৯৬৪৭
CRP-Chapain, Savar, Dhaka-1343, Bangladesh. Tel: +88 02 224445464-5, +88 02 224441404, Mobile: +88 01730059647
E-mail : principal-bhpi@crp-bangladesh.org, Web: bhpi.edu.bd

Date: 04.05.2025

The Chairman

Institutional Review Board (IRB)

Bangladesh Health Professions Institute (BHPI)

CRP-Savar, Dhaka-1343, Bangladesh.

Subject: **Application for review and ethical approval.**

Sir,

With due respect, I would like to draw your kind attention that I am a student of M. Sc. in Occupational Therapy, Part-II at Bangladesh Health Professions Institute (BHPI), Centre for the Rehabilitation of the Paralysed (CRP). I would like to conduct research titled "Level of Body Image Disturbance and Self-esteem among the Adolescents with Amputation in Bangladesh" with myself as the principal investigator and Professor Dr Mohammad Sohrab Hossain, Executive Director of Centre for the Rehabilitation of the Paralysed (CRP) as my thesis supervisor. The purpose of the study is to assess the level of body image disturbance and self-esteem and its associated factors among adolescents with amputation in Bangladesh.

Bangla Version of the Amputee Body Image Scale Revised version (ABIS-R), Rosenberg's Self-Esteem Questionnaire (RSE) Scale will be used in the study which will take about 15 to 20 minutes. Data collectors will receive informed consent from all participants and collected data will be kept confidential.

Therefore, I look forward to having your approval for the thesis proposal and to start data collection. I also assure you that I will maintain all the requirements for study.

Sincerely yours,

Israt Jahan

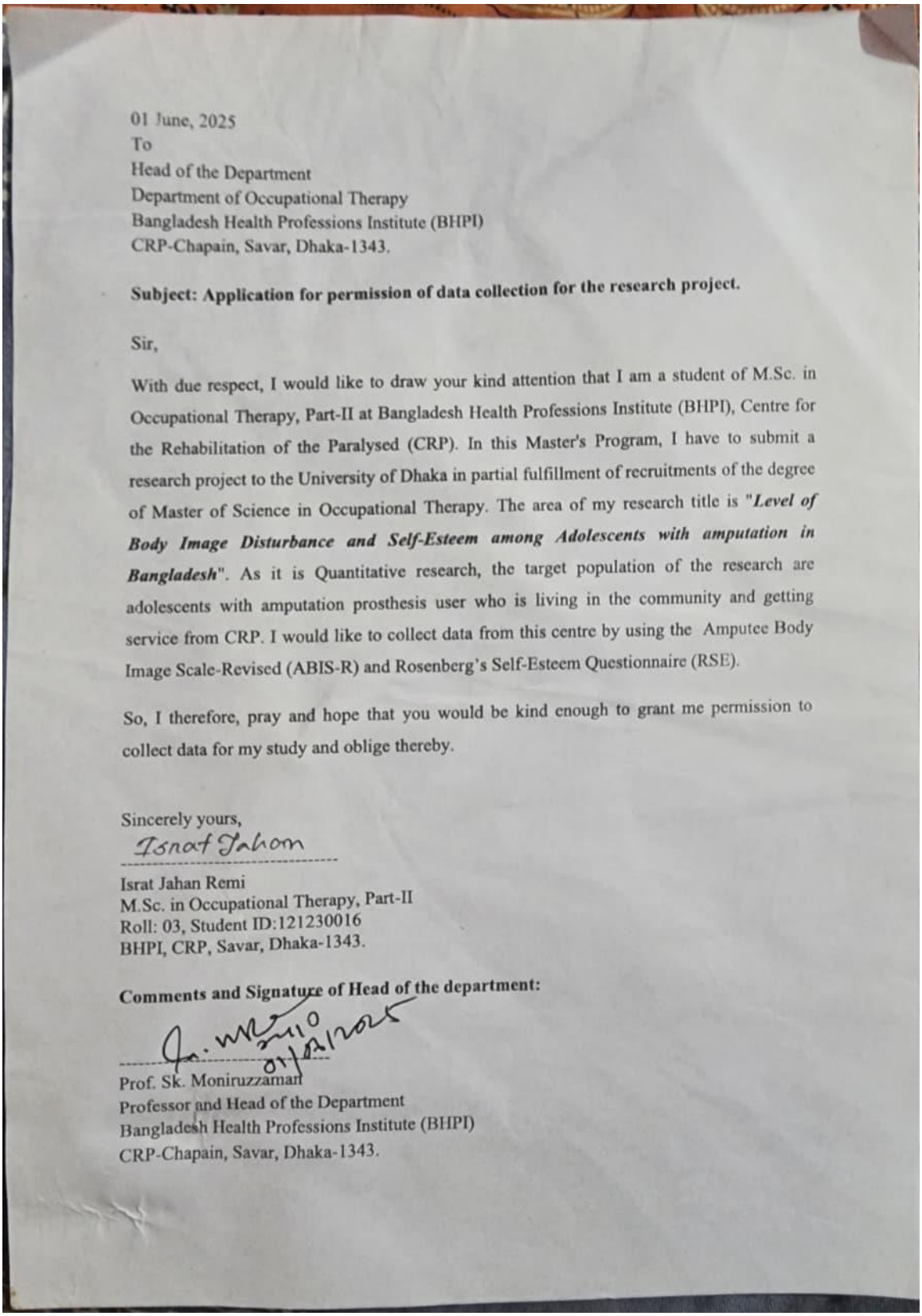
Israt Jahan Remi
M.Sc. in Occupational Therapy, Part-II
BHPI, CRP, Savar, Dhaka-1343.
Roll: 03, Student ID:121230016

Recommendation from the thesis supervisor:

S. Hossain

Professor Dr Mohammad Sohrab Hossain
Executive Director
Centre for the Rehabilitation of the Paralysed (CRP)
Chapain, Savar, Dhaka-1343.

Appendix B: Permission Letter for Data Collection



01 June, 2025
To
Head of the Department
Department of Occupational Therapy
Bangladesh Health Professions Institute (BHPI)
CRP-Chapain, Savar, Dhaka-1343.

Subject: Application for permission of data collection for the research project.

Sir,

With due respect, I would like to draw your kind attention that I am a student of M.Sc. in Occupational Therapy, Part-II at Bangladesh Health Professions Institute (BHPI), Centre for the Rehabilitation of the Paralysed (CRP). In this Master's Program, I have to submit a research project to the University of Dhaka in partial fulfillment of recruitments of the degree of Master of Science in Occupational Therapy. The area of my research title is "***Level of Body Image Disturbance and Self-Esteem among Adolescents with amputation in Bangladesh***". As it is Quantitative research, the target population of the research are adolescents with amputation prosthesis user who is living in the community and getting service from CRP. I would like to collect data from this centre by using the Amputee Body Image Scale-Revised (ABIS-R) and Rosenberg's Self-Esteem Questionnaire (RSE).

So, I therefore, pray and hope that you would be kind enough to grant me permission to collect data for my study and oblige thereby.

Sincerely yours,
Israt Jahan

Israt Jahan Remi
M.Sc. in Occupational Therapy, Part-II
Roll: 03, Student ID:121230016
BHPI, CRP, Savar, Dhaka-1343.

Comments and Signature of Head of the department:

01/06/2025

Prof. Sk. Moniruzzaman
Professor and Head of the Department
Bangladesh Health Professions Institute (BHPI)
CRP-Chapain, Savar, Dhaka-1343.

17 August, 2025
To
Kazi Maksudul Alam
Regional Director
SARPV, Chakaria

Subject: Application for permission of data collection for the research project.

Sir,

With due respect, I would like to draw your kind attention that I am a student of M.Sc. in Occupational Therapy, Part-II at Bangladesh Health Professions Institute (BHPI), Centre for the Rehabilitation of the Paralysed (CRP). In this Master's Program, I have to submit a research project to the University of Dhaka in partial fulfillment of recruitments of the degree of Master of Science in Occupational Therapy. The area of my research title is "***Level of Body Image Disturbance and Self-Esteem among Adolescents with amputation in Bangladesh***". As it is Quantitative research, the target population of the research are adolescents with amputation prosthesis user who is living in the community. I would like to collect data from this centre by using the Amputee Body Image Scale-Revised (ABIS-R) and Rosenberg's Self-Esteem Questionnaire (RSE).

So, I therefore, pray and hope that you would be kind enough to grant me permission to collect data for my study and oblige thereby.

Sincerely yours,
Israt Jahan

Israt Jahan Remi
M.Sc. in Occupational Therapy, Part-II
Roll: 03, Student ID:121230016
BHPI, CRP, Savar, Dhaka-1343
Contact: 01635523960
Email: isratjahanremi20ot@gmail.com

বাংলাদেশ হেলথ্ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The academic institute of CRP)
CRP-Chapain, Savar, Dhaka. Tel: 02224445464, Website: www.bhpi.edu.bd

Date: 17 August, 2025

To
Managing Director
Step Rehabilitation Center
Shyamoli, Dhaka.

Subject: Regarding data collection for dissertation.

Greetings from the Bangladesh Health Professions Institute (BHPI), I would like to inform you that BHPI, the academic institute of the Centre for the Rehabilitation of the Paralysed (CRP). CRP is running the Master of Science in Occupational Therapy course. Under the Faculty of Medicine, University of Dhaka.

According to the content of the Master of Science in Occupational Therapy course curriculum, the students have to do Research in different topic to develop their skills. Considering the situation, your institute/organization will be the most appropriate place to collect data.

Master of Science in Occupational Therapy student Israt Jahan Remi would like to collect data in your institute/organization. The research title is "Level of Body Image Disturbance and Self-Esteem among Adolescents with amputation in Bangladesh ".

We will remain grateful to you if you could kindly allow her to conduct data collection.

With Regards,

Prof. Sk. Moniruzzaman
Professor & Head
Department of Occupational Therapy
CRP-Chapain, Savar, Dhaka-1343.
Bangladesh Health Professions Institute (BHPI)
CRP-Chapain, Savar, Dhaka-1343.

বাংলাদেশ হেলথ্ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The academic institute of CRP)
CRP-Chapain, Savar, Dhaka, Tel: 02224445464, Website: www.bhpi.edu.bd

Date: 10 August, 2025

To
DED-2
THS, TMSS

Subject: Regarding data collection for dissertation.

Greetings from the Bangladesh Health Professions Institute (BHPI). I would like to inform you that BHPI, the academic institute of the Centre for the Rehabilitation of the Paralysed (CRP). CRP is running the Master of Science in Occupational Therapy course. Under the Faculty of Medicine, University of Dhaka.

According to the content of Master of Science in Occupational Therapy course curriculum, the students have to do Research in different topic to develop their skills. Considering the situation, your institute/organization will be the most appropriate place to collect data.

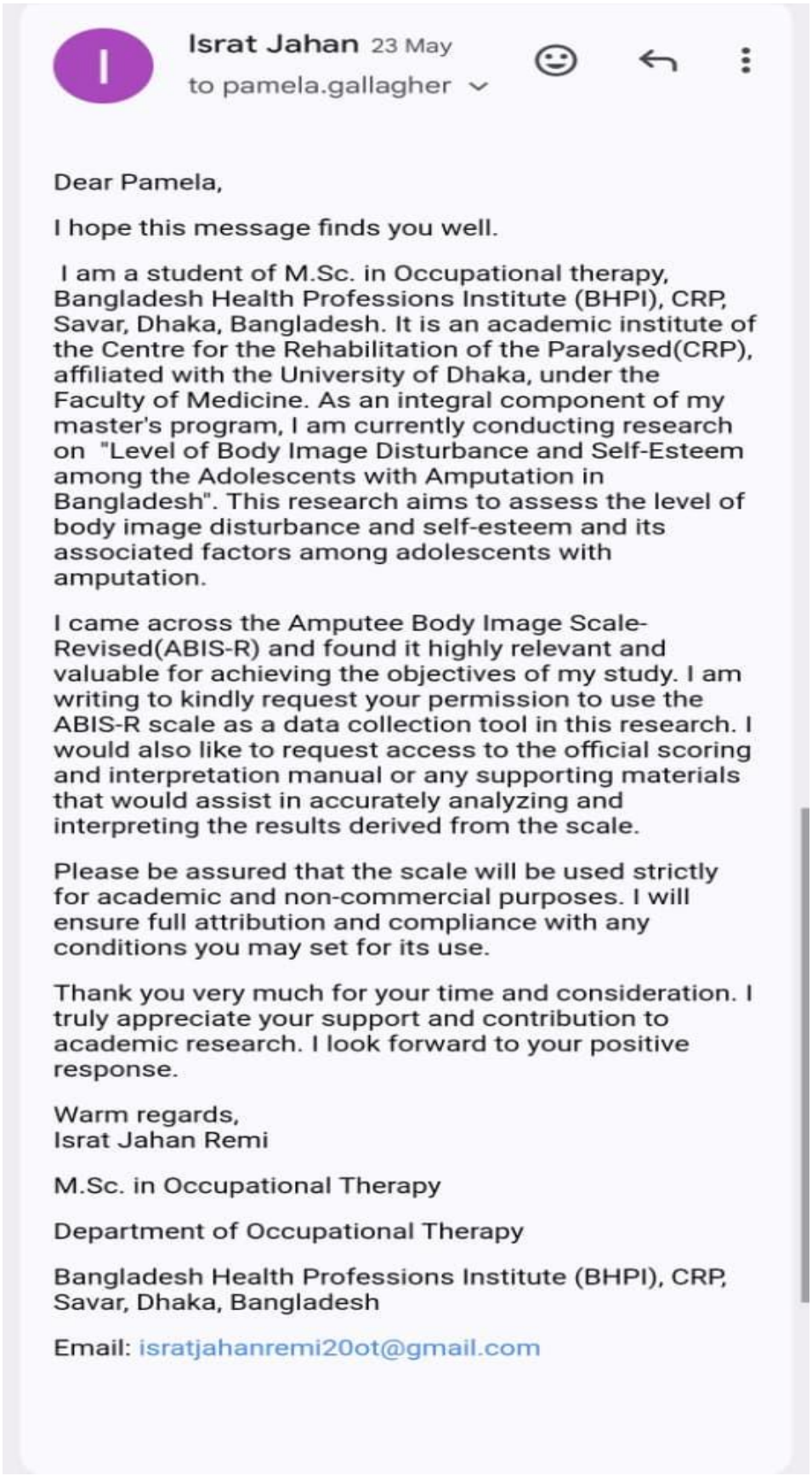
Master of Science in Occupational Therapy student Israt Jahan Remi would like to collect data in your institute/organization. The research title is "Level of Body Image Disturbance and Self-Esteem among Adolescents with amputation in Bangladesh ".

We will remain grateful to you if you could kindly allow her to conduct data collection.

With Regards,

Prof. Sk. Moniruzzaman
Professor & Head
Department of Occupational Therapy
Bangladesh Health Professions Institute (BHPI)
CRP-Chapain, Savar, Dhaka-1343.

BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI) • CRP, SAVAR, DHAKA • Date: 10 August 2025



Israt Jahan 23 May

to pamela.gallagher

Dear Pamela,

I hope this message finds you well.

I am a student of M.Sc. in Occupational therapy, Bangladesh Health Professions Institute (BHPI), CRP, Savar, Dhaka, Bangladesh. It is an academic institute of the Centre for the Rehabilitation of the Paralysed(CRP), affiliated with the University of Dhaka, under the Faculty of Medicine. As an integral component of my master's program, I am currently conducting research on "Level of Body Image Disturbance and Self-Esteem among the Adolescents with Amputation in Bangladesh". This research aims to assess the level of body image disturbance and self-esteem and its associated factors among adolescents with amputation.

I came across the Amputee Body Image Scale-Revised(ABIS-R) and found it highly relevant and valuable for achieving the objectives of my study. I am writing to kindly request your permission to use the ABIS-R scale as a data collection tool in this research. I would also like to request access to the official scoring and interpretation manual or any supporting materials that would assist in accurately analyzing and interpreting the results derived from the scale.

Please be assured that the scale will be used strictly for academic and non-commercial purposes. I will ensure full attribution and compliance with any conditions you may set for its use.

Thank you very much for your time and consideration. I truly appreciate your support and contribution to academic research. I look forward to your positive response.

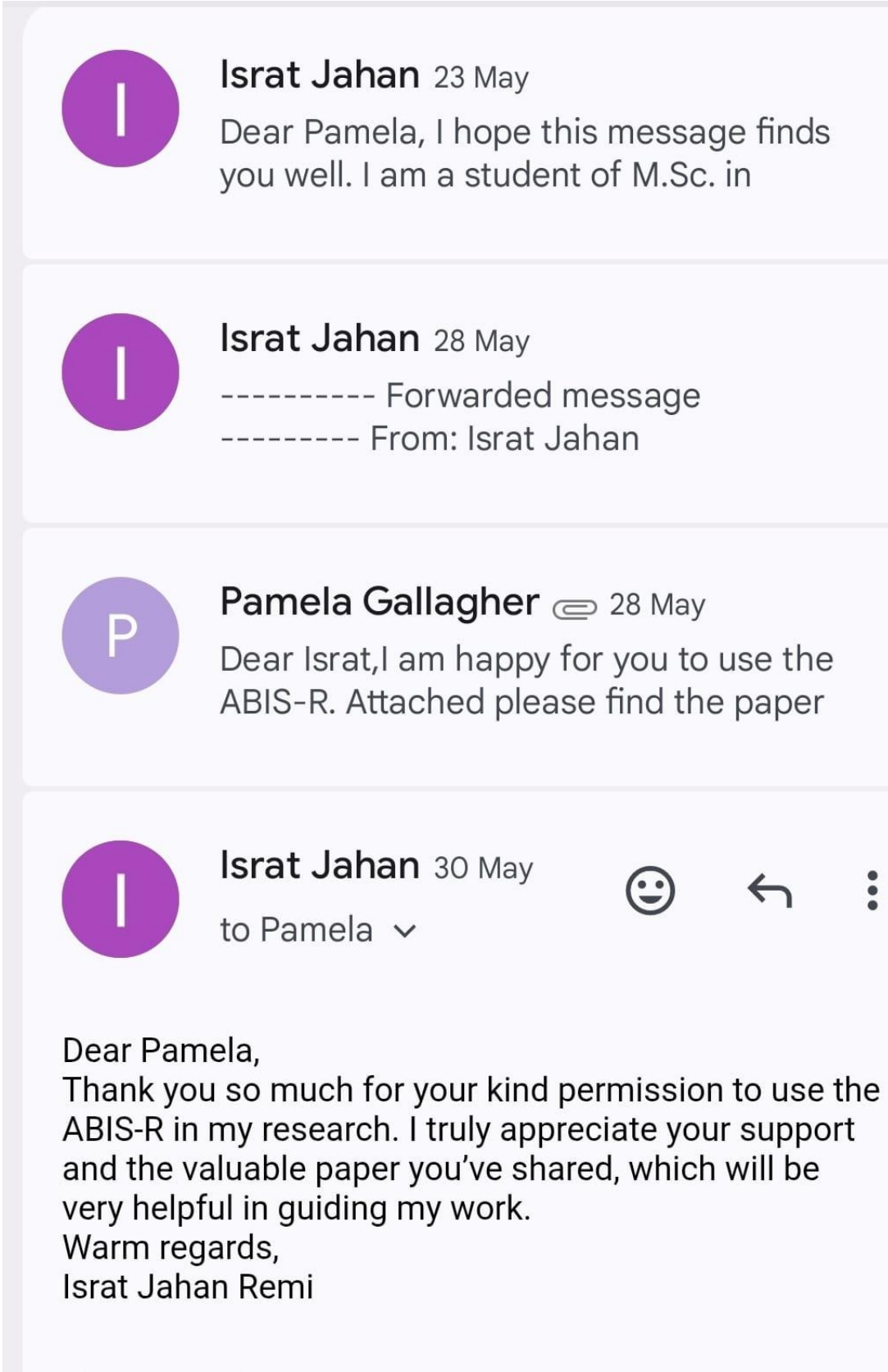
Warm regards,
Israt Jahan Remi

M.Sc. in Occupational Therapy

Department of Occupational Therapy

Bangladesh Health Professions Institute (BHPI), CRP, Savar, Dhaka, Bangladesh

Email: isratjahanremi20ot@gmail.com



Israt Jahan 23 May

Dear Pamela, I hope this message finds you well. I am a student of M.Sc. in

Israt Jahan 28 May

---------- Forwarded message
--------- From: Israt Jahan

Pamela Gallagher 28 May

Dear Israt,I am happy for you to use the ABIS-R. Attached please find the paper

Israt Jahan 30 May

to Pamela

Dear Pamela,
Thank you so much for your kind permission to use the ABIS-R in my research. I truly appreciate your support and the valuable paper you've shared, which will be very helpful in guiding my work.
Warm regards,
Israt Jahan Remi

Appendix C: Information Sheet and Consent Form [English Version]

Title: Level of Body Image Disturbance and Self-Esteem among the Adolescents with Amputation in Bangladesh Investigator: Israt Jahan Remi, Student of M.Sc in Occupational Therapy, Bangladesh Health Professions Institute (BHPI), CRP- Savar, Dhaka- 1343 Place: Community Introduction I am Israt Jahan Remi, M.Sc. in Occupational Therapy student of Bangladesh Health Professions Institute (BHPI), have to conduct a thesis as a part of this Master's course, under thesis supervisor Prof. Dr. Mohammad Sohrab Hossain, Executive Director, CRP, Savar, Dhaka. You are going to have details information about the study purpose, data collection process, ethical issues. You do not have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research. If this consent form contains some words that you do not understand, please ask me to stop. I will take the time to explain. Background and Purpose of the study You are being invited to be a part of this research because, as an individual, you have a better understanding of the body image disturbance and self-esteem among adolescents with amputation in the living community. The purpose of my study is to assess the level of body image disturbance and self-esteem and its associated factors among adolescents with amputation. This study will be helpful in gaining a better understanding of body image disturbance and self-esteem among adolescents with amputation living in the community. Research related information The research-related information will be discussed with you throughout the information sheet before you sign the consent form. After that, participants will be asked to complete a self-administrative question, which may take 15-20 minutes. In this questionnaire, there will be questions on socio-demographic factors (for example, Age, family income, Occupation). It will also contain some specific and structured questions related to your body image disturbance and self-esteem. In particular, in this

research, I have selected adolescent amputation with prosthesis users living in the community. The information recorded is confidential, and your identity will not be disclosed. Risks and benefits We are asking you to share some personal and confidential information, and you may feel uncomfortable talking about some of the topics. You do not need to take part in the discussion interview if you don't wish to, and that is also okay. On the other hand, you may not have any direct benefit from participating in this research, but your valuable participation is likely to help us determine the level of body image disturbance and self-esteem among adolescents with amputation with prosthesis users living in the community. Confidentiality Information about you will not be shared with anyone outside of the research team. The information that we collect from this research project will be kept private. Only the researchers will know about your information, and we will lock that information up with a lock and key. It will not be shared with or given to anyone except Prof. Dr Mohammad Sohrab Hossain, the study supervisor. Sharing the Results Nothing that you tell us today will be shared with anybody outside the research team, and nothing will be attributed to you by name. The knowledge that we get from this research will be shared with you before it is made widely available to the public. There will also be a small presentation, and these will be announced. Following the presentations, we will publish the results so that other interested people may learn from the research. Information withdrawal You can cancel any information collected for this research project at a fixed time. After publishing the research, you cannot withdraw any information. After the cancellation, we expect permission from the information to use it or not. Who to Contact If you have any questions, you can ask me now or later. If you wish to ask questions later, you may contact Israt Jahan Remi, Master of Science in Occupational Therapy, Department of Occupational Therapy, Cell phone-01635523960.

This proposal is reviewed and approved by the Institutional Review Board (IRB), Bangladesh Health Professions Institute (BHPI), CRP-Savar (CRP/BHPI/IRB/09/22/647) Dhaka-1343, Bangladesh, which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find out more about the IRB, contact Bangladesh Health Professions Institute (BHPI), CRP-Savar, Dhaka-1343, Bangladesh. You can ask me any more questions about any part of the research study if you wish to. Do you have any questions?

Consent Form

Code No:

Assalamu Alaikum,

I am Israt Jahan Remi, Part-II, M. Sc. in occupational therapy student, BHPI, CRP, Savar, Dhaka-1343. I am asking you to participate in a research study. This form is designed to give you information about this study. I want to describe this study to you and answer any of your questions. My study title is “Level of Body Image Disturbance and Self-Esteem among the Adolescents with Amputation in Bangladesh” The purpose of my study is to assess the level of body image disturbance and self-esteem and its associated factors among adolescents with amputation. This will take approximately 15-20 minutes. During the interview period, if you feel any emotional disturbance, social and economic risk and any other discomfort or physical risk, please tell me, and I will stop the interview immediately. I am committed that the study will not be harmful or risky for you. There is no payment for taking part in the study. All information you provide will be treated as confidential, and in the event of any report or publication, you will be assured that the source of information remains anonymous. Your participation in this study is voluntary, and you may withdraw

at any time during this study without any negative consequences. You also have the right not to answer a particular question that you do not like or do not want to answer during an interview. Suppose you have any queries about studying or your rights as a participant. In that case, you may contact me or my supervisor, Prof. Dr. Mohammad Sohrab Hossain, Executive Director, CRP, Savar, Dhaka.

Do you have any questions before I start?

So, may I have your consent to proceed with the interview?

YES NO

Signature of the investigator & Date: ……...

Signature of the participant & Date: ……...

Signature of the witness & Date: ……....

Appendix D: Information Sheet and Consent Form [Bangla Version]

বাংলাদেশ হেলথ্ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই)

অকুপেশনাল থেরাপি বিভাগ

সিআরপি, চাঁপাইন, সাভার, ঢাকা-১৩৪৩

টেলি: ০২-৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪, ফ্যাক্স: ০২- ৭৭৪৫০৬

কোড নং:.....

অংশগ্রহণকারীদের তথ্য এবং সম্মতিপত্র

গবেষণার বিষয়: বাংলাদেশে অঙ্গচ্ছেদের শিকার কিশোর-কিশোরীদের মধ্যে শারীরিক প্রতিচ্ছবির ব্যাঘাত এবং আত্ম-সম্মানের মাত্রা নির্ণয়।

গবেষক: ইসরাত জাহান রেমি, পার্ট-২, মাস্টার্স অব সাইন্স ইন অকুপেশনাল থেরাপির ছাত্রী, বাংলাদেশ হেলথ প্রফেসন ইনস্টিটিউট (বিএইচপিআই), সাভার, ঢাকা-১৩৪৩।

তত্ত্বাবধায়ক: প্রফেসর ড. মোহাম্মদ সোহরাব হোসেন, নির্বাহী পরিচালক, সিআরপি, সাভার, ঢাকা।

গবেষণার স্থান: বসবাসকারী সমাজ

ভূমিকা

আমি ইসরাত জাহান রেমি ঢাকা বিশ্ববিদ্যালয়ে চিকিৎসা অনুষদের অধীনে বাংলাদেশ হেলথ্ প্রফেশনস ইনস্টিটিউটে পার্ট ২ মাস্টার্স অফ সাইন্স ইন অকুপেশনাল থেরাপি বিভাগে ছাত্রী হিসেবে স্নাতকোত্তর শিক্ষা কার্যক্রম (২০২৩-২৪) সেশনে অধ্যায়নরত আছি। বি এইচ পি আই থেকে অকুপেশনাল থেরাপি এমএসসি শিক্ষা কার্যক্রমটি সম্পূর্ণ করার জন্য একটি গবেষণা প্রকল্প পরিচালনা করা বাধ্যতামূলক। এই গবেষণা প্রকল্পটি প্রফেসর ড. মোহাম্মদ সোহরাব হোসেনের তত্ত্বাবধায়নে সম্পূর্ণ করা হবে। এই অংশগ্রহণকারী তথ্যপত্রের মাধ্যমে গবেষণার প্রকল্পটির উদ্দেশ্য উপাত্ত সংগ্রহের প্রণালী ও গবেষণাটির সাথে সংশ্লিষ্ট বিষয় কিভাবে রক্ষিত হবে তা বিস্তারিতভাবে আপনার কাছে উপস্থাপন করা হবে। যদি এই গবেষণায় অংশগ্রহণ করতে আপনি ইচ্ছুক থাকেন, সেক্ষেত্রে এই গবেষণার সম্পৃক্ত বিষয় সম্পর্কে স্বচ্ছ ধারণা থাকলে সিদ্ধান্তগ্রহণ সহজতর হবে। অবশ্য এখন আপনার অংশগ্রহণ আমাদের নিশ্চিত করতে হবে না। যেকোন সিদ্ধান্ত গ্রহণের পূর্বে যদি চান, আপনার আত্মীয়-স্বজন বন্ধু অথবা আস্থাভাজন যে কারো সাথে এই ব্যাপারে আলোচনা করতে পারেন। অপরপক্ষে অংশগ্রহণকারী তথ্য পত্রটি পড়ে যদি কোন বিষয়বস্তু সমস্যা হয় যদি কোন কিছু সম্পর্কে আরো বেশি জানার প্রয়োজন হয়, তবে নির্দ্বিধায় প্রশ্ন করতে পারেন।

গবেষণার প্রেক্ষাপট ও উদ্দেশ্য

আপনাকে এই গবেষণার অংশ হতে আমন্ত্রণ জানানো হচ্ছে কারণ, একজন ব্যক্তি হিসেবে, জীবিত সম্প্রদায়ের অঙ্গচ্ছেদের শিকার কিশোর-কিশোরীদের মধ্যে শরীরের প্রতিচ্ছবি ব্যাঘাত এবং আত্মসম্মান সম্পর্কে আপনার আরও ভাল ধারণা রয়েছে। আমার গবেষণার উদ্দেশ্য হল

অঙ্গচ্ছেদের শিকার কিশোর-কিশোরীদের মধ্যে শরীরের প্রতিচ্ছবি ব্যাঘাত এবং আত্মসম্মান এবং এর সাথে সম্পর্কিত কারণগুলির মূল্যায়ন করা। এই গবেষণা সম্প্রদায়ে বসবাসকারী অঙ্গচ্ছেদের শিকার কিশোর-কিশোরীদের মধ্যে শরীরের প্রতিচ্ছবি ব্যাঘাত এবং আত্মসম্মান সম্পর্কে আরও ভাল ধারণা অর্জনে সহায়ক হবে।

এই গবেষণা কর্মটিতে অংশগ্রহণের সাথে সম্পৃক্ত বিষয় সমূহ কি সে সম্পর্কে জানা যাক

আপনার থেকে অনুমতিপত্রে স্বাক্ষর নেবার আগে অংশগ্রহণকারী তথ্যপত্রের মাধ্যমে গবেষণা প্রকল্পটির পরিচালনা করা তথ্যসমূহ বিস্তারিতভাবে আপনার কাছে উপস্থাপন করা হবে। আপনি যদি এই গবেষণায় অংশগ্রহণ করতে চান, তাহলে সম্মতিপত্রে আপনাকে স্বাক্ষর করতে হবে।

এরপরে অংশগ্রহণকারীদের একটি আদর্শ প্রশ্নাবলী সম্পূর্ণ করতে হবে যার জন্য ১৫ থেকে ২০ মিনিট সময় লাগতে পারে। এই প্রশ্নাবলীতে সামাজিক জনসংখ্যা কত কারন গুলির উপর প্রশ্ন থাকবে। উদাহরণস্বরূপ: বয়স, অভিজ্ঞতা। এখানে আপনার শরীরের প্রতিচ্ছবিতে ব্যাঘাত এবং আত্মসম্মান সম্পর্কিত কিছু নির্দিষ্ট এবং কাঠামোগত প্রশ্নও থাকবে। রেকর্ড করা তথ্য গোপনীয় এবং আপনার পরিচয় প্রকাশ করা হবে না। যদি আপনি সম্মতি প্রধান না করেন তবে আপনাকে অংশগ্রহণ করতে হবে না। আপনি সম্মতি প্রদান করা সত্ত্বেও যে কোনো সময় গবেষক কে কোন ব্যাখ্যা প্রদান করা ছাড়ায় নিজের অংশগ্রহণ প্রত্যাহার করতে পারবেন। গবেষণা প্রকল্পটিতে অংশগ্রহণ করা কিংবা না করা অথবা পরবর্তীতে অংশগ্রহণ প্রত্যাহার করার সিদ্ধান্তের সাথে আপনার বর্তমান জীবনে কোনভাবে প্রভাবিত হবে না।

অংশগ্রহণের সুবিধা ও ঝুঁকি সমূহ কি?

গবেষণা প্রকল্পটি চলাকালীন সময়ে আপনার কিছু ব্যক্তিগত প্রশ্নের উত্তর দিতে হতে পারে যার কারনে আপনি অত্যান্ত অপ্রস্তুত বোধ করতে পারেন। আপনি যদি তা করতে না চান তাহলে আপনাকে অংশগ্রহণ করতে হবে না। অন্যদিকে, এই গবেষণায় অংশগ্রহণ করে আপনার সরাসরি কোন লাভ নাও হতে পারে, তবে আপনার মূল্যবান অংশগ্রহণ সমাজে বসবাসকারী আপনার শরীরের প্রতিচ্ছবিতে ব্যাঘাত এবং আত্মসম্মান সম্পর্কিত কিছু নির্দিষ্ট এবং কাঠামোগত এবং সংশ্লিষ্ট কারণগুলো জানতে সাহায্য করবে। এখানে সংশ্লিষ্ট গবেষণায় অংশগ্রহণে কোন ধরনের বাড়তি ঝুঁকি, বিপত্তি, অথবা অস্বস্তি নেই বলে আশা করা যাচ্ছে।

তথ্যের গোপনীয়তা কি নিশ্চিত থাকবে?

এই সম্মতিপত্রে স্বাক্ষর করার মধ্য দিয়ে আপনি এই গবেষণা প্রকল্পে অধ্যায়নরত গবেষণা কর্মীকে আপনার ব্যক্তিগত তথ্য সংগ্রহ ও ব্যবহার করার অনুমতি দিয়েছেন। এই গবেষণা প্রকল্পের জন্য সংগৃহীত যেকোনো তথ্য, যা আপনাকে সনাক্ত করতে পারে তা গোপনীয় থাকবে। আপনার সম্পর্কে সংগৃহীত তথ্যসমূহ সাংস্কৃতিক উপায়ে উল্লেখ থাকবে। শুধুমাত্র এর সাথে সরাসরি সংশ্লিষ্ট গবেষক ও তার তত্ত্বাবধায়ক এই তথ্য সমূহে প্রবেশাধিকার পাবেন। সাংকেতিক উপায়ে চিহ্নিত উপাত্তসমূহ পরবর্তী উপাত্ত বিশ্লেষণের কাজে ব্যবহৃত হবে। তথ্য পত্র গুলো যথাযথ স্থানে গোপনীয়তার সাথে রাখা হবে। বি এইচ পি আই এর অকুপেশনাল থেরাপি বিভাগে ও গবেষকের ব্যক্তিগত ল্যাপটপে উপাত্ত সমূহের ইলেকট্রনিক অর্জন সংগৃহীত থাকবে।

প্রত্যাশা করা হচ্ছে যে, এই গবেষণা প্রকল্পের ফলাফল বিভিন্ন ফোরামে প্রকাশিত এবং উপস্থাপিত হবে। যেকোনো ধরনের প্রকাশনা ও উপস্থাপনার ক্ষেত্রে তথ্যসমূহ এমনভাবে সরবরাহ করা হবে যেন আপনার সম্মতি ছাড়া আপনাকে কোনভাবেই শনাক্ত করা না যায়। তথ্য উপাত্ত প্রাথমিকভাবে কাগজপত্র সংগ্রহ করা হবে।

গবেষণা সম্পর্কে জানতে কোথায় যোগাযোগ করতে হবে?

গবেষণা প্রকল্পটির বিষয়ে যোগাযোগ করতে চাইলে অথবা গবেষণা প্রকল্পটি সম্পর্কে কোন প্রশ্ন থাকলে এখন বা পরবর্তীতে যেকোনো সময় জিজ্ঞাসা করতে পারেন। সে ক্ষেত্রে আপনি গবেষকের সাথে উল্লেখিত ০১৬৩৫-৫২৩৯৬০ নাম্বারে যোগাযোগ করতে পারেন।

এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ্ প্রফেশন্স ইনস্টিটিউট, সাভারের প্রাতিষ্ঠানিক নৈতিকতা পরিষদ (সিআরপি - বিএইচপিআই/আইআরবি/০৯/১৮/৬৪৭) থেকে পর্যালোচিত ও অনুমোদিত হয়েছে। এই গবেষণা প্রকল্প পরিচালনা প্রসঙ্গে যেকোনো উদ্বিগ্ন অথবা অভিযোগকারী ব্যক্তি প্রাতিষ্ঠানিক নৈতিকতা পরিষদের সাথে এই নাম্বারে (৭৭৪৫৪৬৪-৫) যোগাযোগ করবেন।

গবেষণা থেকে নিজেকে প্রত্যাহার করা যাবে কি?

আপনি সম্মতি প্রদান করা সত্ত্বেও যে কোন সময় গবেষককে কোন ব্যাখ্যা প্রদান করা ছাড়াই নিজের অংশগ্রহণ প্রত্যাহার করতে পারবেন। বাতিল করার পর তথ্য সমূহ কি ব্যবহার করা যাবে কি যাবে না তার অনুমতি অংশগ্রহণকারীর প্রত্যাহারপত্রে (শুধুমাত্র স্বেচ্ছায় প্রত্যাহার কারীর জন্য প্রযোজ্য) উল্লেখ করা থাকবে।

সম্মতি পত্র

কোড নং

আসসালামু আলাইকুম

আমি ইসরাত জাহান রেমি, পার্ট-২, মাস্টার অব সাইন্স ইন অকুপেশনাল থেরাপির ছাত্রী, বিএইচপিআই, সিআরপি, সাভার, ঢাকা-১৩৪৩। আমার গবেষণার শিরোনাম হল বাংলাদেশে অঙ্গচ্ছেদের শিকার কিশোর-কিশোরীদের মধ্যে শারীরিক প্রতিচ্ছবির ব্যাঘাত এবং আত্ম-সম্মানের মাত্রা নির্ণয়। আমি আপনাকে এ সম্পর্কে কিছু প্রশ্ন করতে চাই, এতে আনুমানিক ১৫-২০ মিনিট সময় লাগবে।

সাক্ষাৎকারের সময় যদি আপনি কোন মানসিক বিপর্যয়, সামাজিক ও অর্থনৈতিক ঝুঁকি এবং অন্য কোন অস্বস্তিকর শারীরিক ঝুঁকিতে পড়ে থাকেন তবে আমাকে বলবেন, আমি অবিলম্বে সাক্ষাৎকারটি বন্ধ করব। আমি প্রতিশ্রুতিবদ্ধ যে গবেষণাটি আপনার জন্য ক্ষতিকর বা ঝুঁকিপূর্ণ হবে না। গবেষণায় অংশগ্রহণের জন্য কোন আর্থিক সহায়তা করা হবে না। আপনার দ্বারা প্রদত্ত সমস্ত তথ্য গোপনীয় হিসেবে গণ্য হবে।

এই গবেষণায় আপনার অংশগ্রহণ হবে স্বেচ্ছাকৃত এবং আপনি কোন নেতিবাচক ফলাফল ছাড়া এ গবেষণার সময় যেকোনো সময়ে নিজেকে প্রত্যাহার করতে পারবেন। এ ছাড়া আপনি পছন্দ করেন না এমন নির্দিষ্ট প্রশ্নের উত্তর না দেয়ার অধিকার আপনার আছে। যদি আপনার আরো কিছু জানার আগ্রহ থাকে তবে আপনি আমাকে অথবা আমার সুপারভাইজার ড. মোহাম্মদ সোহরাব হোসেন, নির্বাহী পরিচালক, সি আরপি, সাভার, ঢাকা যোগাযোগ করতে পারেন। শুরু করার পূর্বে আপনার কোন প্রশ্ন থাকলে আপনি করতে পারেন। আপনি কি সম্মতি দিচ্ছেন?

হ্যাঁ ☐ না ☐

গবেষকের স্বাক্ষর এবং তারিখ.....

অংশগ্রহণকারীর স্বাক্ষর এবং তারিখ.....

সাক্ষীর স্বাক্ষর এবং তারিখ.....

অংশগ্রহণকারীর প্রত্যাহার পত্র

(শুধুমাত্র স্বেচ্ছায় প্রত্যাহার কারীর জন্য প্রযোজ্য)

অংশগ্রহণকারীর নাম:

প্রত্যাহার করার কারণ :

পূর্ববর্তী তথ্য ব্যবহার করার অনুমতি থাকবে কিনা

হ্যাঁ / না

অংশগ্রহণকারীর নাম:

অংশগ্রহণকারীর স্বাক্ষর/ অংশগ্রহণকারীর আঙ্গুলের ছাপ:

তারিখ:

সাক্ষীর নাম……

সাক্ষীর স্বাক্ষর

তারিখ

Appendix E: Questionnaire [English Version]

Section: 1 Socio-Demographic Questionnaire (English Version)

SL	Questions	Responses	Codes
1	Age of the participants (in years)	.....	
2	Gender	Male Female Others	1 2 3
3	Marital status	Married Unmarried Separated Widowed Divorced	1 2 3 4 5
4	Number of family members (with whom you are living)	.....	
5	Living area	Rural Urban	1 2
6	The highest level of education acquired	Primary education Secondary education / Dakhil Higher secondary / Alim Graduate	1 2 3 4
7	Present job status	Student Paid job Business Farmer Homemaker Day labor	1 2 3 4 5 6

		Unemployed Others (.....)	7 8
8	Monthly family income (in taka)	.....	
9	Are you the main earning member?	Yes No	1 2
10	Level of amputation	Foot At the ankle Below the knee At the knee Above the knee At the hip Shoulder Above the elbow At the elbow Below the elbow At the wrist	1 2 3 4 5 6 7 8 9 10 11
11	Causes of amputation	Road traffic accidents Peripheral vascular diseases Hit by sharp objects Infection Birth defect Diabetes Fall from height Cancer Other (.....)	1 2 3 4 5 6 7 8 9
12	Duration of amputation (in months)	.....	

13	Duration of prosthesis use (in months)	.....	
14	Have you experienced phantom limb pain?	Yes No	1 2
15	Daily hours of prosthesis use (in hours)	.....	
16	Existing comorbidities	No existing comorbidities Diabetes Hypertension Musculoskeletal disorders Cardiac CKD Others (.....)	1 2 3 4 5 6 7

Section: 2 Amputee Body-Image Scale Revised (ABIS-R)

This questionnaire is designed to measure how you see and feel about your body image. Please answer each item carefully and accurately.

Item	**None of the time (0)**	**Sometimes (1)**	**Most/ All of the time (2)**
1.Because I have an amputation, I feel more concerned about my physical appearance in social situations than when I am alone			
2.I like my overall physical appearance when wearing my prosthesis.			
3. It worries me that the disability impairs my physical ability to perform various activities of daily living.			
4. I avoid looking into a full-length mirror in order not to see my prosthesis.			
5. Because I am an amputee, I feel worries about my physical appearance on a daily basis.			
6.I experience a phantom limb.			
7. Since losing my limb, it bothers me that I no longer conform to society's idea of normal appearance.			
8. It worries me that the loss of my limb impairs my ability to protect myself from harm.			
9.When I am not wearing my prosthesis, I avoid situations where my physical appearance can be evaluated by others (e.g., I avoid social situations, swimming pool or beach activities, etc.).			
10. The loss of my limb makes me think of myself as disabled.			
11. I like my physical appearance when not wearing my prosthesis.			

12. When I am walking, people notice my limp.			
13. When I am wearing my prosthesis, I avoid situations where my physical appearance can be evaluated by others (e.g., I avoid any social situations, and/or I avoid swimming pool or beach activities etc.).			

Section: 3 ROSENBERG Self-Esteem Scale

S.I	Question	Strongly disagree	Disagree	Agree	Strongly Agree
1	I feel that I am a person of worth, at least on an equal plan with others				
2	I feel that I have a number of good qualities				
3	I am inclined to feel that I am a failure				
4	I am able to do things as well as most other people				
5	I do not have much to be proud of				
6	I take positive attitude toward myself				
7	On the whole, I am satisfied with myself				
8	I certainly feel useless at times				
9	I wish I had most respect for myself				
10	At times I think I am no good at all				

Appendix F: Questionnaire [Bangla Version]

সামাজিক-জনসংখ্যাগত প্রশ্নাবলী (Socio-Demographic Questionnaire – বাংলা সংস্করণ)

ক্রমিক	প্রশ্নাবলী	উত্তরসমূহ	কোড
১	অংশগ্রহণকারীর বয়স (বছরে)	.....	—
২	লিঙ্গ	পুরুষ মহিলা অন্যান্য	১ ২ ৩
৩	বৈবাহিক অবস্থা	বিবাহিত অবিবাহিত পৃথক বিধবা/বিপত্নীক তালাকপ্রাপ্ত	১ ২ ৩ ৪ ৫
৪	পরিবারের সদস্য সংখ্যা (যাদের সাথে বসবাস করছেন)	.....	—
৫	বাসস্থান	গ্রামীণ শহর	১ ২
৬	সর্বোচ্চ শিক্ষাগত যোগ্যতা	প্রাথমিক শিক্ষা মাধ্যমিক / দাখিল উচ্চমাধ্যমিক / আলিম স্নাতক	১ ২ ৩ ৪
৭	বর্তমান পেশাগত অবস্থা	শিক্ষার্থী বেতনভুক্ত চাকরি ব্যবসা	১ ২ ৩

		কৃষক গৃহিণী দিনমজুর বেকার অন্যান্য (.....)	৪ ৫ ৬ ৭ ৮
৮	মাসিক পারিবারিক আয় (টাকায়)	.....	—
৯	আপনি কি পরিবারের প্রধান উপার্জনকারী?	হ্যাঁ না	১ ২
১০	অঙ্গহানির স্তর	পা গোড়ালির কাছে হাটুর নিচে হাটুতে হাটুর ওপরে নিতম্বে কাঁধে কনুইয়ের ওপরে কনুইতে কনুইয়ের নিচে কব্জিতে	১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০ ১১
১১	অঙ্গহানির কারণ	সড়ক দুর্ঘটনা রক্তনালীর রোগ ধারালো কিছু দ্বারা আঘাত সংক্রমণ	১ ২ ৩ ৪

		জন্মগত ত্রুটি ডায়াবেটিস উচ্চ স্থান থেকে পড়ে যাওয়া ক্যানসার অন্যান্য (.....)	৫ ৬ ৭ ৮ ৯
১২	অঙ্গহানির সময়কাল (মাসে)	.....	—
১৩	কৃত্রিম অঙ্গ ব্যবহারের সময়কাল (মাসে)	.....	—
১৪	আপনি কি কখনো বিচ্ছেদকৃত অঙ্গে ব্যথা অনুভব করেছেন?	হ্যাঁ না	১ ২
১৫	প্রতিদিন কত ঘন্টা কৃত্রিম অঙ্গ ব্যবহার করেন?	.....	—
১৬	বিদ্যমান সহ-অসুস্থতা	কোনো সহ-অসুস্থতা নেই ডায়াবেটিস উচ্চ রক্তচাপ মাসল বা হাড়ের সমস্যা হৃদরোগ কিডনি সমস্যা অন্যান্য (.....)	১ ২ ৩ ৪ ৫ ৬ ৭

Amputee Body-Image Scale (ABIS) Bangla

আপনার শারীরিক অবয়বকে আপনি কীভাবে দেখেন এবং এই সম্পর্কে আপনি কি অনুভব করেন তা পরিমাপ করার জন্য এই প্রশ্নপত্রটি তৈরী করা হয়েছে। অনুগ্রহপূর্বক সচেতনতার সহিত সঠিক ভাবে নিচের ঘরে তথ্যগুলো পূরণ করুনঃ

বিষয়াবলী	কোন সময়ই না (০)	মাঝে মাঝে (১)	প্রায় সব সময়ই (২)
১) যেহেতু আমার অঙ্গহানি আছে, তাই একা থাকার চেয়ে সামাজিক পরিস্থিতিতে আমার শারীরিক রূপ নিয়ে বেশি উদ্বিগ্ন বোধ করি।			
২) কৃত্রিম অঙ্গ পরিহিত অবস্থায় আমাকে দেখতে আমার নিজের কাছে ভালো লাগে।			
৩) এটা আমাকে উদ্বিগ্ন করে যে আমার অঙ্গহানি দৈনন্দিন জীবনের বিভিন্নন্ন কাজে আমার শারীরিক ক্ষমতাকে বাহত করে।			
৪) আমার কৃত্রিম অঙ্গ না দেখার জন্য বড় আয়নায় নিজেকে দেখা এড়িয়ে গুলি।			
৫) যেহেতু আমার অঙ্গহানি আছে, তাই আমি প্রতিদিনই আমার শরীরিক রূপ নিয়ে উখিয়া বোধ করি।			
৬) আমি বিচ্ছেদকৃত অঙ্গে ব্যথা অনুভব করি।			
৭) আমার অঙ্গহানি হওয়ার পর থেকে, এটা আমাকে বিরক্ত করে যে সমাজ স্বীকৃতি সাধারণ চেহারা মানদণ্ডের আমারটা সঙ্গতিপূর্ণ নাই।			
৮) এটা আমাকে উদ্বিগ্ন করে যে আমার অঙ্গ হারানো আমার নিজেক নিরাপদ রাখার ক্ষমতাকে ব্যাহত করে।			
৯) যখন আমি কৃত্রিম অঙ্গ পরিধান করি না, তখন এমন পরিস্থিতি এড়িয়ে চলি | যেখানে আমার শারীরিক রূপ অন্যরা সমালোচনা করতে পারে (যেমন, আমি সামাজিক পরিস্থিতি এড়িয়ে সমুদ্র সৈকত এড়িয়ে চলি)।			
১০) আমার অঙ্গ হারানোতে নিজেকে প্রতিবন্ধী ব্যক্তি বলে মনে করি।			
১১) যখন আমি কৃত্রিম অঙ্গ পরিধান না করি তখন আমার শারীরিক রূপ আমি পছন্দ করি।			
১২) যখন আমি হাঁটি, আশেপাশের মানুষ খুঁড়িয়ে চলার দিকে খেয়াল করে।			

১৩) যখন আমি কৃত্রিম অঙ্গ পরিধান করি, তখন এমন পরিস্থিতি এড়িয়ে চলি। যেখানে আমার শারীরিক রূপ অন্যরা সমালোচনা করতে পারে (যেমন, আমি সামাজিক পরিস্থিতি এড়িয়ে চলি, পুকুর / নদী বা সমুদ্র সৈকত এড়িয়ে চলি)।			

আত্ম-মূল্যায়ন প্রশ্নমালা (Self-Esteem Scale - Bangla)

ক্রমিক নং	প্রশ্ন	দৃঢ়ভাবে একমত	একমত	অসম্মতি	দৃঢ়ভাবে অসম্মতি
১	আমি অনুভব করি যে আমি একজন মূল্যবান ব্যক্তি, অন্তত অন্যদের সাথে সমান পরিকল্পনায়।				
২	আমি অনুভব করি যে আমার অনেক ভালো গুণ আছে।				
৩	আমি অনুভব করি যে আমি একজন ব্যর্থ মানুষ।				
৪	আমি অন্যান্য লোকেদের মতো সব করতে সক্ষম।				
৫	আমার গর্ব করার মতো খুব বেশি কিছু নেই।				
৬	আমি নিজের প্রতি ইতিবাচক মনোভাব নিয়ে থাকি।				
৭	সব মিলিয়ে আমি নিজেকে নিয়ে সন্তুষ্ট।				
৮	আমি অবশ্যই মাঝে মাঝে অকেজো বোধ করি।				
৯	আমি যদি নিজের জন্য সবচেয়ে বেশি সম্মান পেতাম।				
১০	মাঝে মাঝে মনে হয় আমি ভালো নেই।				

Appendix G: Volunteer Recruitment Form

This research is part of the Occupational Therapy course. The researcher's name is Md. Saddam Hossain is a student of M.Sc. in Occupational Therapy at Bangladesh Health Professions Institute (BHPI), the academic institute of the Centre for the Rehabilitation of Paralysed (CRP), which is affiliated with the University of Dhaka. The study was entitled "The Level of Psychosocial Adjustment and Associated Factors among the Lower Limb Amputation with Prosthesis Users Living in the Community: An Analytical Cross-Sectional Study."

For data collectors for conducting interviews:

Please read the following statements and put tik (✓) on yes or no to say that you understand the research aim and objectives and your involvement and agree to participate as a data collector in the above-named study.

1. I confirm that I have understood the aim and objectives of the study or that it has been explained to me …….....Yes/ No

2. I understand that my role is voluntary….....Yes/ No

3. I have sufficient time to come to my decision about participation.....Yes/No

4. I agree to take part in the above study as a data collector……..... Yes/No Data collector's name and signature: Date: