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Compassion Integration into the Biopsychosocial Model: A Conceptual Framework for Psychological Adjustment among People with Differences in Sex Development in Khyber Pakhtunkhwa

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Abstract:
Individuals with Differences of Sex Development (DSD) often face complicated psychological, social, and cultural challenges that may adversely affect their self-esteem, resilience, identity development, and overall quality of life. Though the multidisciplinary team working with DSD individuals may use the biopsychosocial model in the treatment approach, they lack compassion and self-compassion as important element in adjusting to the culture of being the minority group. The present theoretical article suggests combined biopsychosocial–compassion framework for understanding psychological adjustment among individuals with DSD in Khyber Pakhtunkhwa, Pakistan. According to Compassion-Focused Therapy and biopsychosocial perspectives it emphasizes the importance of self-compassion as a protective psychological factor that may improve self-esteem, adaptive coping, emotional regulation, resilience, and psychological well-being. It further highlights the impact of socio-cultural factors, such as family support, stigma, minority stress, religious values, and community attitudes, in shaping adjustment outcomes. The article discusses that compassion-based processes may help address psychological problems related to stigma, shame, and self-criticism by developing a positive self-concept and social connections. This proposed framework combines compassion with biopsychosocial approaches to understand better the experiences of individuals with DSD and provide them with individual, culturally sensitive, and psychologically supportive care to enhance their well-being and quality of life. Thus, it can be helpful in providing directions for future research, interventions, and clinical practices in dealing with DSD individuals.

Key words: Differences of Sex Development, Compassion-Focused Therapy, Biopyschosocial Model, Resilience, Self-esteem, Quality of life, Psychological Adjustment, Self-compassion, Khyber Pakhtunkhwa

Introduction:

The term Disorders of Sex Development (DSD) is used to describe congenital diseases in which development of gonadal, chromosomal, or anatomical sex is abnormal. For solitary or syndromic DSDs, there are about 80 single-gene etiologies. One Genes influencing sex differentiation (e.g., sex hormone production, receptors) and the other influencing sex determination (e.g., gonadal dysgenesis, ovotesticular DSD) are major groups. The most well-known DSDs include 5-α reductase failure, full or partial androgen insensitivity syndrome, and typical congenital adrenal hyperplasia. Overall, estimates of the incidence of DSDs vary from 1:1003 to around 1:4500 to 5000 live births (Lee et al., 2006). Individuals with DSD still suffer significant dilemma of contradictory disclosures right from birth, such as medical disclosure or parenting disclosure because of fear of stigma, identity issues and rights of the person as DSD. (Lundberg et al., 2019).

There is a disconnect between the day-to-day emotional aspects of living with a DSD and the solution-focused exchanges that take place within a specialist clinic appointment. Psychological care is defined as skillful education, helping patients and families cope with their diagnosis and treatment, enabling good communication with others, and contributing to clinical decision-making. Moreover, this study found that patients and parents did not seek clarification of information they found confusing. In practice, only 20% of people asked questions while making clinical decisions, while some were identified with emotional content such as sadness prior to visiting the clinic, and issues like infertility were not ultimately discussed during the consultations. (Alderson et al., 2023). In another study it was seen that people with DSDs often experience shame and self-criticism in those societies where gender standards are strict and conversation related to sex development is forbidden, hence in such societies DSD conditions are kept secret from others. (Sandberg et al., 2012).

The psychological aspects in DSD people are becoming more widely recognized, but still detailed theory-driven models that can direct assessment and intervention are quiet deficient. Moreover, majority of existing frameworks are based on Western culture, hence they could not effectively symbolize the cultural reality of people with DSD in collectivistic communities. Thus current study suggests a biopsychosocial–compassion model that combines the biopsychosocial framework with the concepts of Compassion-Focused Therapy (CFT) to better understand and treat psychological adjustment in people with DSD.

Theoretical Background

Biopsychosocial (BPS) Model and DSD

Engel (1977) presented the biopsychosocial model, which specified change from basic biological methods toward a more inclusive view of health and sickness. This model highlights the relationship between biological processes, psychological functioning, and social context in shaping health outcomes, rather than attaching disease only to biological failure. In mental and physical health studies, especially in complex, stigmatized, and chronic diseases, the biopsychosocial model has increased its important in the past few years (Engel, 1977). The meta-analysis showed that biological, psychological, and social factors all play important roles in the development and maintenance of chronic musculoskeletal pain. This emphasizes the need for a

holistic approach that focuses not only on the physical treatment but also on the psychological and social issues (Dunn et al., 2024). A study by Khalil et al. showed that by implementing biopsychosocial model in managing Type 2 diabetes mellitus increased compliance and better treatment plans, thus improving health outcomes. They investigated the connection among the biological factors like the onset, progression, and outcomes of the disease along with psychological health and social elements like lifestyle, support networks, and socioeconomic conditions (Khalil et al., 2025). Richter and Dixon (2023), in their quasi-systematic review, highlighted the importance of a biopsychosocial conceptual approach in understanding the mental health issues by combining biological, psychological, and social factors. This review pointed out that mental health is complex and multifaceted in nature, and its challenges arise from multiple aspects like genetic predispositions, cognitive and emotional processes, and social and cultural environments (Richter & Dixon, 2023). Differences in Sex Development (DSD) include lifelong biological variations that are connected with societal stigma; thus, in such conditions a holistic approach plays an important role. Traditionally, the main focus of care for individuals with DSD has been on medical and surgical treatments, as it is a group of congenital disorders consisting of variations in chromosomal, gonadal, or anatomical sex development. According to Liedmeier (2021) and Rapp (2018), the biopsychosocial model is important to understand the various factors affecting the quality of life in individuals with DSD. The biological factors, such as physical health and medical care; psychological factors like self-esteem, emotional well-being, and coping strategies; and social factors like relationships, social participation, and stigma should be considered to improve quality of life among individuals with DSD. Further, both studies emphasized the importance of psychosocial support and sexual health counseling to enhance over well-being and resilience along with medical treatment in DSD individuals (Lee et al., 2006; Liedmeier et al., 2021; Rapp et al., 2018). The limitations, such as insufficient team communication and lack of psychological expertise in the psychological care of children and families with DSD, shifted the treatment approach from simple psychoeducation to tailored and ethically comprehensive treatment plans prioritizing patient values and long-term health. It thus highlighted the importance of early, holistic, and multidisciplinary psychological interventions focusing on prevention, reducing stigma, and improving self-efficacy through detailed patient-focused care and decision-making (Alderson et al., 2023). Children with DSD and their families face various challenges, such as stigma, doubts regarding gender identity, decisions about surgery, or frequent medical procedures, giving rise to maladaptive coping strategies that adversely affect their psychological health. It has been emphasized that social support helps to reduce stress and increase self-worth and self-esteem, helps in understanding and managing issues by providing material and practical help, and also provides social companionship. Thus, such support can reduce feelings of helplessness, stigma, and psychological distress by providing understanding, acceptance, and practical help to families and children with DSD. Psychosocial care serves as an important protective factor in understanding patient-and family-centered care in multidisciplinary DSD medical teams (Cohen & Wills, 1985; Ernst et al., 2016). Additionally, studies have shown that guilt, shame, and stigma related to DSD conditions adversely affect their well-being. About 55%-70% of individuals felt uncomfortable and reluctant in discussing their diagnosis. People with several DSD conditions face emotional difficulties due to their chronic conditions and frequent medical visits, giving rise to many other

mental challenges. Thus, social support for these individuals is important as a treatment that helps in improving their self-esteem and resilience in these emotional and behavioural challenges (de Vries et al., 2019; Meyer, 2015).

Compassion-Focused Therapy

Paul Gilbert developed Compassion-Focused Therapy (CFT) as a holistic, empirically validated treatment for individuals experiencing emotional instability, shame, guilt, and self-criticism. It is based on concepts of psychological distress through the interaction of three emotion regulation systems: the threat system, the drive system, and the soothing system from evolutionary psychology, attachment theory, and affective neuroscience. In people with chronic mental or physical health conditions, their threat system is overactive and their soothing system is underdeveloped (Gilbert, 2005; Gilbert, 2014).

CFT has demonstrated considerable effectiveness across a wide range of therapeutic populations, including those with depression, anxiety disorders, trauma-related conditions, eating disorders, psychosis, and chronic illnesses. Meta-analyses and systematic reviews provide evidence that CFT enhances self-compassion, emotional regulation, psychological well-being, and resilience, while significantly reducing symptoms of depression, anxiety, shame, and self-criticism (Kirby et al., 2017; Leaviss & Uttley, 2015).

Self-criticism serves as a powerful trigger for threat processing within the brain. The human mind possesses the ability to create complex and dysfunctional cycles involving motives, emotions, and cognition due to our capacity for imagination, anticipation, and rumination. Experiencing clinical levels of shame and self-criticism can significantly disrupt the ability to activate inner affiliative systems, which are crucial for regulating emotions and maintaining well-being (Gilbert, 2014). The literature reviewed highlights that psychological well-being is a complex concept complicatedly linked to biological, social, environmental, and therapeutic factors. In various settings and among different groups, elements such as self-esteem, social support, satisfaction with care, and the handling of shame as well as the financial barriers for its treatment are identified as crucial areas for enhancing mental health. The findings support for a shift towards patient-centered, multidisciplinary care that integrates psychological support, peer assistance, and evidence-based therapeutic methods like Compassion-Focused Therapy (de Vries et al., 2019; Ernst et al., 2018).

From the point of diagnosis, families need significant emotional and informational assistance. Parents of children with DSD frequently suffer considerable emotional distress and uncertainty regarding diagnosis so they should be reassured that their child can grow into a well-adjusted and functional member of society, and while privacy should be maintained and DSD should not be viewed as shameful. Quality of life includes experiences such as falling in love, dating, attraction, forming intimate relationships, sexual functioning, and the possibility of marriage and raising children, irrespective of biological sex indicators. The most common issues faced by DSD patients are sexual aversion and a lack of arousability, which are often mistakenly seen as low libido. Adolescents entering puberty may experience anxiety due to repeated genital examinations, atypical genital appearance, and doubts about masculinity/femininity or sexual adequacy (Hughes et al., 2006; Sandberg et al., 2012). People with DSD might feel increased shame and internalized stigma about their condition. CFT's emphasis on lessening self-criticism

and fears of compassion can play a crucial role in reducing these negative self-perception (Vidal and Soldevilla, 2022; Carvalho et al., 2021).

Empirical Support for the Biopsychosocial Model in DSD

The BPS model offers a more comprehensive framework in understanding the DSD conditions beyond just physiological processes and the interactions of biological, psychological, and social factors (Bolton, 2023). According to the BPS model, DSD care should involve a multidisciplinary approach that deals with the physical or genetic diagnosis and the psychological support, along with ethical and social issues, taking into consideration the patient's personal identity and rights. The model highlights the importance of patient care and their individualized treatment plan because of the complex nature of the DSD conditions. This suggests that healthcare professionals should consider the biological characteristics, psychological factors, personal preferences, and social circumstances while developing an individualized treatment plan (Sandberg and Gardner, 2022). Such an approach is important, especially for sensitive challenges like infertility issues, gender identity development, psychosocial adjustment, and also lifelong frequent hospital visits. Thus, by providing proper care in different stages of life, from childhood to adulthood, the BPS model by a multidisciplinary team helps the individuals with DSD to receive consistent support and have better psychosocial adjustment that improves their quality of life (Nowotny and Reisch, 2022).

In DSD, both empirical studies and clinical applications strongly support the biopsychosocial model as an important theoretical and practical approach. Though improvements in genetic diagnosis are important, with effective psychological support and careful social-ethical considerations, it can enhance patients' quality of life. Though there are ongoing concerns and problems regarding the DSD treatment in different hospitals or clinics, by healthcare teams in managing them. They still struggle to have a complete multidisciplinary team that consists of endocrinologist, surgeons, psychologists, geneticists, social workers, or other specialists. Thus, more studies are required to improve the clinical guidelines and healthcare policies according to BPS model to provide complete help to individuals with DSD (Kızılay and Özen, 2024; Bolton, 2023; Garland et al., 2021; Crerand et al., 2024).

Compassion-Based Interventions and Emerging Clinical Evidence

Individuals with DSD often feel embarrassed discussing their conditions, leading to uncertainty in seeking psychological treatment; this "unspeakable shame" associated with many types of DSD causes them to be harsh on themselves and develop self-hatred. Therefore, research consistently highlights shame as a key issue in DSD. In recent psychotherapeutic studies, it has been seen that CFT, consisting of self-compassion-enhancing strategies, plays an important role in understanding and developing kindness towards oneself during difficult times and thus improving one's mental health. In clinical psychology, self-compassion has become a significant topic these days and is defined as the capacity to be gentle and supportive to oneself in times of hopelessness or when one makes a mistake. Training individuals to adopt a more compassionate and kind response to hardships improves self-compassion by encouraging the practice of self-kindness, mindfulness, and a sense of shared human experience. CFT addresses fundamental psychological factors such as shame and guilt. Compassion means understanding and

recognizing the suffering of oneself and others and having an honest desire to reduce or prevent that suffering by kindness or action to help oneself, received from others or given to others. Meta-analyses have investigated fears of self-compassion and fears of receiving compassion from others are connected to the development of shame, self-criticism, and depression. CFT's main objective is the development of self-compassion and the capacity to accept compassion from others, thus reducing the psychological and emotional problems related to self-criticism and shame by improving self-acceptance and social support (Austin et al., 2021; Craig et al., 2020; Ferrari et al., 2019).

Suggested Biopsychosocial–Compassion Model

This model is based on the classical biopsychosocial context by including empathy and compassion mechanisms to enhance complete patient care. This model further elaborates George Engel's basic model, which consisted of biological, psychological, and social factors affecting health, and compassion as an active factor that enhance these factors and lessens their effect.

Empathy and Compassion Mechanisms:

This aspect of compassion focuses on what happens in the brain, nervous system, and behavior when a person experiences or expresses compassion. It has been seen that certain areas of the brain like the ventromedial prefrontal cortex, become active when it receives compassionate thoughts and feelings. It then releases oxytocin that increases feelings of trust, connection, and emotional security, thus regulating emotions, reducing stress and anxiety, and improving well-being. Compassion can be shown through actions like helping someone in need, offering emotional support, showing kindness and understanding, and cooperating with others (Barbour et al., 2024; Bolton, 2022).

Compassion should be present throughout all aspects of DSD care. Healthcare professionals should show empathy by understanding and respecting the person's feelings and experiences, proving acceptance and support. Thus, compassionate approach emphasizes that individuals have the right to make decisions about their bodies and healthcare by providing informed consent and care in consideration of the patient's cultural background, beliefs, values, and religious practices. This compassionate approach seeks to correct the previous practices in DSD care, like how the decisions were mainly made by the medical professionals or the families and the psychological and social needs were overlooked. Compassionate DSD care promotes individuals' dignity and worth, makes their own decisions regarding informed consent, freedom from shame and discrimination, and equal access to society and healthcare support (Garland et al., 2021).

This model highlights the need for a multidisciplinary team consisting of endocrinologists, surgeons, gynecologists, psychologists, social workers, and advocates. There should be proper communication throughout the treatment journey among this multidisciplinary team, keeping the cultural sensitivity in mind, especially in essential times like the transition from adolescence to adulthood (Nowotny and Reisch, 2022). The Biopsychosocial-Compassion Model for DSD represents an innovative, patient-focused approach that deals with all the difficulties involved in managing such conditions, for example, by educating the patient about the biological aspects and providing psychological and social support through compassion. Thus, this model provides an

environment that gives respect and a holistic approach enhancing complete health and well-being (Saxena et al., 2022; Nowotny and Reisch, 2022; Nimbi et al., 2021).

1. Social Level: Family, Culture, and Perceived Support in KP

People with DSD face many psychosocial difficulties throughout their lives due to the early frequent medical visits, parenting challenges, feelings of shame and guilt, self-criticism, and gender identity. Many individuals with DSD reported lacking someone they can trust to disclose their conditions in spite of having few close friends. Emotional burden due to shame and stigma creates problems in open discussion with others, thus they remain isolated most of the time. Further, it has been seen that 20 % parents also try to hide the conditions of their children from close friends and 27% are unwilling to share information with relatives (Roen, 2019). In Khyber Pakhtunkhwa (KPK), factors such as family and relationships and cultural values and traditions, along with social support from relatives and community members, greatly influence people's vulnerability to stress and difficult situations like natural disasters and chronic illnesses. Research in KPK has shown that families are a major source of emotional support, practical help, financial assistance, and helps individual develop resilience to deal in such difficult situations. For example, research on flood-induced vulnerabilities in rural KPK communities indicates that family structures significantly influence the ability to manage health risks after a disaster. Households led by women and those with younger heads are particularly vulnerable, and family support can alleviate some of these risks, while its absence increases vulnerability (Shah et al., 2024). Cultural factors in KPK greatly affect social relationships and perceptions of support. The disruption of traditional cultural practices, especially due to climate-induced migration following repeated floods, heightens feelings of isolation among displaced families. Displacement results in the breakdown of long-established social support networks and cultural community ties, complicating integration into new host communities and fostering a sense of identity loss and marginalization (Khan et al., 2025). Thus, depending on how families perceive and respond to DSD within cultural and religious narratives, social environment in KP can operate as both a risk factor and a protective buffer.

2. Psychological Level: Resilience, Coping, Emotion Regulation, and Self-Compassion

The model highlights resilience, coping mechanisms, emotion regulation, and self-compassion as key psychological mechanisms that impact quality of life and self-esteem. Studies repeatedly show that people with DSD are susceptible to body-related anxiety, internalized shame, self-criticism, and fear of rejection, especially in situations when social surroundings are devaluing (de Vries et al., 2019). People in KP culture may rely on avoidant coping, repression, or over compliance, which are linked to worse mental health outcomes, because emotional expression, particularly when it comes to identity or physical issues, is frequently prohibited. In this sense, resilience is a contextually molded ability that is impacted by: Emotional atmosphere in the family, creating meaning in religion, availability of psychological assistance.

Here, self-compassion is very important. Self-compassion combats guilt and self-blame, which are important problems with DSD-related discomfort. It is defined as treating oneself with respect throughout suffering, acknowledging common humanity, and preserving emotional equilibrium (Lee et al., 2016). When external affirmation is scarce, self-compassion offers an internal source of safety for those who were reared in critical or secrecy-oriented contexts.

3. Culture and Islamic Perspective of Compassion-Focused Therapy

The holistic approach of CFT encourages people to be compassionate towards themselves and others, reducing self-criticism by developing kindness, forgiveness, and understanding. These concepts are consistent with the teachings of Islam that emphasize ‘Rahman’, meaning mercy and compassion towards others, forgiveness and taking care of oneself in a respectful manner. Researchers have developed therapies that combine modern psychology with Islamic teachings, like the Traditional Islamically Integrated Psychotherapy (TIIP) that combines Islamic spiritual practices with cognitive and emotion-focused techniques to reduce psychological issues like anxiety, depression, or any other mental issue in Muslim patients (Khan et al., 2025).

- **No blame for innate conditions** — biological variation is part of divine creation (Qur’an 30:22)
- **Self-compassion and mercy — “**Allah shows more mercy to His servants than a mother does to her child” (Alharbi & Al Hadid, 2019).

Compassion is a universal human value, but different people have their own way of understanding, expressing, and experiencing it depending on their culture, religion, and social background. Research shows that compassion in healthcare settings is shaped by their cultural and religious belief, and also by Rahmah, social support, respect, and community responsibility (Poudel et al., 2025). The flexible nature of CFT allows the therapist to modify it according to the individual’s experience, personal values, religious beliefs, and social environment. Individualized case formulation is made to improve self-esteem, reduce self-criticism and shame by using different techniques like compassionate imagery, soothing rhythm breathing, and developing compassionate-self (Garrett et al., 2025). CFT uses psychoeducation, therapeutic exercises, and a supportive therapist-client relationship to overcome their worries and fears regarding their conditions and also the cultural barriers, thus increasing their willingness to seek mental health help (Steindl et al., 2022). Islam encourages compassion through actions and relationships by showing kindness and mercy to others, forgiveness, and strong family bonds. CFT also practices these values, focusing on experiencing and practicing compassion rather than just understanding it. Many spiritual traditions, including Islam practices reflections of going beyond self-centered concerns and recognizing the connections with others. This practice is usually known as ‘brotherhood’ and ‘ummah’, showing compassion and mercy to others, which is again similar to CFT components. CFT focuses on teaching people to become aware of their thoughts and emotions and respond to them with kindness rather than self-criticism, and these are again similar to Islamic teachings. Though CFT has similar concepts to those of Islam, it is a psychological intervention and not just a religious one and can be used with people of different faiths also (Gilbert and Gordon, 2023). Islam doesn’t focus only on religious worship but also promotes mental and social well-being by practicing compassion for self and others, sincerity (Ikhlas), patience (sabr), and gratitude (shukr). Islamic practices like praying, fasting, and the remembrance of Allah are not only performed for religious purposes, but they also give us psychological benefits by managing our emotions effectively, being resilient in difficult situations, and being more aware of our emotions and selves. This aligns with contemporary research indicating that mindfulness and self-compassion contribute to psychological health

(Medlicott et al., 2021; K and Sulphey, 2021). The integration of compassion-focused interventions with culturally significant religious values can provide a holistic biopsychosocial framework that supports psychological healing, dignity, and quality of life among vulnerable groups, including individuals with differences in sex development (DSD). In the cultural context of Khyber Pakhtunkhwa, where religious values strongly influence attitudes toward health and suffering, compassion-oriented approaches based on Islamic teachings may enhance therapeutic engagement and acceptability (Malik, 2021).

Clinical and Practice Implications of the Biopsychosocial–Compassion Model

The biopsychosocial-compassion approach emphasizes that multidisciplinary care that is, the integration of mental health, medical, social assistance, and psychoeducation is necessary for successful management for complex diseases. Multidisciplinary care has been demonstrated to improve treatment efficacy in different chronic and psychiatric populations by: coordinating plans for medical and psychosocial care, decreasing service fragmentation, encouraging long-term participation in therapy and healthcare. Aligning with broader evidence, biopsychosocial therapy models are supported for chronic illnesses by integrating psychological and physical aspects to enhance quality of life and long-term care (Kovačević, et al., 2024). A significant therapeutic implication of this approach is the use of Compassion-Focused Therapy (CFT), an evidence-based method that targets processes such as shame, self-criticism, and emotional dysregulation. According to systematic reviews and meta-analyses, CFT significantly increases self-compassion and decreases self-criticism and external shame in clinical populations with mental health diagnosis (Brown & Ashcroft, 2025). According to other meta- analytic research, CFT dramatically improves self-soothing skills and reduces self-criticism, a susceptibility factor for many mental diseases (Vidal & Soldevilla, 2022).

Future Research Direction

In order to determine temporal correlations and causal pathways among psychological, social, and cultural factors, future research should focus on empirical testing of the suggested biopsychosocial–compassion model employing longitudinal and mixed-method approaches. Because mental health research shows that concepts like resilience, self-compassion, and perceived social support are dynamic processes that change over time rather than static traits, longitudinal approaches are especially crucial on a global scale (Bonanno, 2004; Gilbert, 2006). Researchers may explore the development of psychosocial adaptability across different life stages and clinical paths by tracking these factors over time, especially in populations facing persistent stress, stigma, or identity-related challenges. It is important to combine compassion with the biopsychosocial model while dealing with DSD individuals to understand and support them better. Thus, it should include self-compassion as an important psychological factor or strength that can protect mental health, have healthy coping strategies, and be resilient. Research shows that self-compassion helps in reducing anxiety, depression, shame, and emotional distress by creating self-acceptance and promoting psychological well-being (Neuenschwander and Gunten, 2024). Researchers should examine how compassion can influence coping strategies of DSD and help them adjust psychologically to it by developing a healthier self-image, self-acceptance, and helping resolve the gender identity issues. It further helps to improve self-

esteem, resilience, coping strategies, and quality of life. Many existing biopsychosocial models focus on biological, psychological, and social factors but at times fail to fully consider culture, religion, stigma, family experiences, and community attitude, which are important in societies such as Pakistan. Individuals with DSD face unique challenges like gender identity, role confusions and social expectations about being male and female, which further affect their mental health (Nimbi et al., 2021). Studies should therefore, further consider factors like culture, family beliefs, and cultural expectations regarding sex and gender that may affect interactions individuals with DSD. They should also consider the additional stress experienced by the people who are marginalized or stigmatized in the society, such as fear of rejection, stigma, and discrimination as these are mostly faced by individuals with DSD. Sometimes due to complications in DSD conditions, the gender is not obvious, whether it is male or female, therefore the healthcare professionals should respect and accept them non-judgmentally and provide patient-centered care, which can help in improving their self-esteem and quality of life (Nimbi et al., 2021). A biopsychosocial perspective emphasizes that psychological well-being among DSD individuals is shaped by the interactions of biological, psychological, and socio-cultural experiences. Especially, minority stress and social discrimination contribute to low self-esteem, poor quality of life, and affecting mental health (Breton et al., 2023). Studies should further discover factors that reduce minority stress among individuals with DSD, like self-compassion and social connectedness. To improve the overall quality of life among DSD individuals, it is important to educate healthcare providers in Khyber Pakhtunkhwa to practice biopsychosocial care and add a compassion element to it, which can lower the self-criticism and cultural misconceptions regarding such conditions (Nimbi et al., 2021). Hence, healthcare providers working with DSD should be properly trained in supporting holistic and culturally competent care and further implementing policy changes.

Conclusion

Further studies should focus on the biological, psychological, and social-cultural factors and compassion and self-compassion and how they work together to influence individuals with DSD to adjust to their life challenges. Longitudinal research should be carried out to investigate further Pakistani culture, family values, religious beliefs, and comprehending compassion and its practical implementations to understand better their adjustment across time. Thus, tailoring culturally appropriate holistic intervention may improve self-esteem, resilience, social support, coping strategies, and quality of life among individuals with DSD.

References

Alderson, J., Hamblin, R. P., & Crowne, E. C. (2023). Psychological care of children and families with variations or differences in sex development. *Hormone Research in Paediatrics*, *96*(2), 222-227. https://doi.org/10.1159/000524517

Alharbi, J., & Al Hadid, L. (2019). Towards an understanding of compassion from an Islamic perspective. *Journal of Clinical Nursing*, *28*(7-8), 1354-1358. https://doi.org/10.1111/jocn.14725

Austin, J., Drossaert, C. H. C., Schroevers, M. J., Sanderman, R., Kirby, J. N., & Bohlmeijer, E. T. (2021). Compassion-based interventions for people with long-term physical

conditions: a mixed methods systematic review. *Psychology & health*, *36*(1), 16-42. https://doi.org/10.1080/08870446.2019.1699090

Barbour, B. N., Twardowska, K., Favero, N., Ghoddousi, P., & Hodkinson, P. (2024). Biopsychosocial Health Considerations for Astronauts in Long-Duration Spaceflight: A Narrative Review. *Wilderness & Environmental Medicine, 36*(Suppl 1), 123S-137S. https://doi.org/10.1177/10806032241289106

Bolton, D. (2022). Looking forward to a decade of the biopsychosocial model. *BJPsych Bulletin, 46*(4), 228–232. https://doi.org/10.1192/bjb.2022.34

Bolton, D. (2023). A revitalized biopsychosocial model: core theory, research paradigms, and clinical implications. *Psychological Medicine, 53*(16), 7504–7511. https://doi.org/10.1017/s0033291723002660

Bonanno, G. A. (2004). Loss, trauma, and human resilience: have we underestimated the human capacity to thrive after extremely aversive events?. *American psychologist*, *59*(1), 20.

Breton, É., Juster, R., & Booij, L. (2023). Gender and sex in eating disorders: A narrative review of the current state of knowledge, research gaps, and recommendations. *Brain and Behavior*, *13*(4), e2871. https://doi.org/10.1002/brb3.2871

Brown, N., & Ashcroft, K. (2025). The effectiveness of compassion focused therapy for the three flows of compassion, self-criticism, and shame in clinical populations: A systematic review. *Behavioral Sciences*, *15*(8), 1031. https://doi.org/10.3390/bs15081031

Carvalho, S. A., Skvarc, D., Barbosa, R., Tavares, T., Santos, D., & Trindade, I. A. (2021). A pilot randomized controlled trial of online acceptance and commitment therapy versus compassion-focused therapy for chronic illness. *Clinical Psychology & Psychotherapy, 29(*2), 524–541. https://doi.org/10.1002/cpp.2643

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological bulletin*, *98*(2), 310. https://psycnet.apa.org/doi/10.1037/0033-2909.98.2.310

Craig, C., Hiskey, S., & Spector, A. (2020). Compassion focused therapy: A systematic review of its effectiveness and acceptability in clinical populations. *Expert review of neurotherapeutics*, *20*(4), 385-400. https://doi.org/10.1080/14737175.2020.1746184

Crerand, C. E., Shehata, A., Umbaugh, H., Kapa, H. M., Hansen-Moore, J., Nahata, L., Buchanan, C., Chen, D., Rausch, J., Udaipuria, S., Jayanthi, V. R., Chan, Y.-M., Pratt, K. J., Buschur, E., Indyk, J., & Tishelman, A. C. (2024). Body image and psychosocial outcomes in youth and young adults with differences of sex development: a multi-method study. *Journal of Pediatric Psychology, 49*(7), 512–523. https://doi.org/10.1093/jpepsy/jsae041

De Vries, A. L., Roehle, R., Marshall, L., Frisén, L., Van De Grift, T. C., Kreukels, B. P., ... & Cohen-Kettenis, P. T. (2019). Mental health of a large group of adults with disorders of sex development in six European countries. *Psychosomatic medicine*, *81*(7), 629-640. https://doi.org/10.1097/PSY.0000000000000718

Dunn, M., Rushton, A. B., Mistry, J., Soundy, A., & Heneghan, N. R. (2024). The biopsychosocial factors associated with development of chronic musculoskeletal pain. An umbrella review and meta-analysis of observational systematic reviews. *Plos one*, *19*(4), e0294830. https://doi.org/10.1371/journal.pone.0294830

Engel, G. L. (1977). The need for a new medical model: a challenge for biomedicine. *Science*, *196*(4286), 129-136. https://doi.org/10.1126/science.847460
Ernst, M. M., Liao, L. M., Baratz, A. B., & Sandberg, D. E. (2018). Disorders of sex development/intersex: gaps in psychosocial care for children. *Pediatrics*, *142*(2). https://doi.org/10.1542/peds.2017-4045
Ferrari, M., Hunt, C., Harrysunker, A., Abbott, M. J., Beath, A. P., & Einstein, D. A. (2019). Self-compassion interventions and psychosocial outcomes: A meta-analysis of RCTs. *Mindfulness*, *10*(8), 1455-1473. https://doi.org/10.1007/s12671-019-01134-6
Garland, F., Thomson, M., Travis, M., & Warburton, J. (2021). Management of 'disorders of sex development'/intersex variations in children: Results from a freedom of information exercise. *Medical Law International,* *21*(2), 116–146. https://doi.org/10.1177/09685332211003636
Garrett, C., Smith, D. M., & Wittkowski, A. (2025). The acceptability of compassion-focused therapy in clinical populations: a metasynthesis of the qualitative literature. *Frontiers in Psychiatry*, *16*, 1400962. https://doi.org/10.3389/fpsyt.2025.1400962
Gilbert, P. (2005). Compassion and cruelty: A biopsychosocial approach. In *Compassion* (pp. 9-74). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780203003459-2/compassion-cruelty-paul-gilbert
Gilbert, P., & Procter, S. (2006). Compassionate mind training for people with high shame and self-criticism: Overview and pilot study of a group therapy approach. *Clinical Psychology & Psychotherapy: An International Journal of Theory & Practice*, *13*(6), 353-379. https://doi.org/10.1002/cpp.507
Gilbert, P. (2014). The origins and nature of compassion focused therapy. *British journal of clinical psychology*, *53*(1), 6-41. https://doi.org/10.1111/bjc.12043
Gilbert, P., & Van Gordon, W. (2023). Compassion as a Skill: A Comparison of Contemplative and Evolution-Based Approaches. *Mindfulness*, *14*(10), 2395–2416. https://doi.org/10.1007/s12671-023-02173-w
Hughes, I. A., Houk, C., Ahmed, S. F., Lee, P. A., & Society, L. W. P. E. (2006). Consensus statement on management of intersex disorders. *Journal of pediatric urology*, *2*(3), 148-162. https://doi.org/10.1016/j.jpurol.2006.03.004
K, J., & Sulphey, M. M. (2021). Workplace spirituality, self-compassion and mindfulness as antecedents of employee mental wellbeing. *South Asian Journal of Business Studies*, *12*(2), 269–292. https://doi.org/10.1108/sajbs-07-2020-0258
Khalil, Y., Abu-Khalaf, L., Abu-Khalaf, R., Abu-Khalaf, S., & Al-Balootti, K. (2025). The Biopsychosocial Model in Type 2 Diabetes Mellitus: A Narrative Review. *Cureus*, *17*(11). https://doi.org/10.7759/cureus.426519
Khan, A., Jawad, M., Ali, S., Ali, A., Khan, Z. U. D., Murad, W., & Baig, M. B. (2025). Impact of Climate Change on Biodiversity and Food Security in Khyber Pakhtunkhwa: Challenges, Vulnerabilities, and Strategies for Sustainable Development. In *Food Systems and Biodiversity in the Context of Environmental and Climate Risks: Dynamics and Evolving Solutions* (pp. 101-140). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-89167-0_4

Khan, F., Keshavarzi, H., Ahmad, M., Ashai, S., & Sanders, P. (2025). Application of Traditional Islamically Integrated Psychotherapy (TIIP) and its clinical outcome on psychological distress among American Muslims in outpatient therapy. *Spirituality in Clinical Practice*, *12*(2), 147–160. https://doi.org/10.1037/scp0000350

Kirby, J. N., Tellegen, C. L., & Steindl, S. R. (2017). A meta-analysis of compassion-based interventions: Current state of knowledge and future directions. *Behavior therapy*, *48*(6), 778-792. https://doi.org/10.1016/j.beth.2017.06.003

Kovačević, I., Pavić, J., Filipović, B., Ozimec Vulinec, Š., Ilić, B., & Petek, D. (2024). Integrated approach to chronic pain—the role of psychosocial factors and multidisciplinary treatment: a narrative review. *International journal of environmental research and public health*, *21*(9), 1135. https://doi.org/10.3390/ijerph21091135

Leaviss J, Uttley L. Psychotherapeutic benefits of compassion-focused therapy: an early systematic review. *Psychological Medicine*. 2015;45(5):927-945. http://doi:10.1017/S0033291714002141

Lee, P. A., Nordenström, A., Houk, C. P., Ahmed, S. F., Auchus, R., Baratz, A., ... & Global DSD Update Consortium. (2016). Global disorders of sex development update since 2006: perceptions, approach and care. *Hormone research in paediatrics, 85*(3), 158-180. https://doi.org/10.1159/000442975

Liedmeier, A., Jendryczko, D., Rapp, M., Roehle, R., Thyen, U., & Kreukels, B. P. (2021). The influence of psychosocial and sexual wellbeing on quality of life in women with differences of sexual development. *Comprehensive Psychoneuroendocrinology*, *8*, 100087. https://doi.org/10.1016/j.cpnec.2021.100087

Lundberg, T., Dønåsen, I., Hegarty, P., & Roen, K. (2019). Moving intersex/DSD rights and care forward: lay understandings of common dilemmas. *Journal of Social and Political Psychology*, *7*(1), 354-377. https://doi.org/10.5964/jspp.v7i1.1012

Malik, S. A. (2021). *Islam and evolution: Al-Ghazālī and the modern evolutionary paradigm* (p. 362). Taylor & Francis. https://library.oapen.org/handle/20.500.12657/48443

Medlicott, E., Phillips, A., Crane, C., Hinze, V., Taylor, L., Tickell, A., Montero-Marin, J., & Kuyken, W. (2021). The Mental Health and Wellbeing of University Students: Acceptability, Effectiveness, and Mechanisms of a Mindfulness-Based Course. *International Journal of Environmental Research and Public Health*, *18*(11), 6023. https://doi.org/10.3390/ijerph18116023

Meyer, I. H. (2015). Resilience in the study of minority stress and health of sexual and gender minorities. *Psychology of sexual orientation and gender diversity*, *2*(3), 209. https://psycnet.apa.org/doi/10.1037/sgd0000132

Neuenschwander, R., & Von Gunten, F. O. (2024). Self-compassion in children and adolescents: a systematic review of empirical studies through a developmental lens. *Current Psychology*, *44*(2), 755–783. https://doi.org/10.1007/s12144-024-07053-7

Nimbi, F. M., Galizia, R., Rossi, R., Limoncin, E., Ciocca, G., Fontanesi, L., Jannini, E. A., Simonelli, C., & Tambelli, R. (2021). The Biopsychosocial Model and the Sex-Positive Approach: an Integrative Perspective for Sexology and General Health Care. Sexuality Research and Social Policy, 19(3), 894–908. https://doi.org/10.1007/s13178-021-00647-x

Nowotny, H. F., & Reisch, N. (2022). Challenges Waiting for an Adult with DSD. Hormone Research in Paediatrics, 96(2), 207–221. https://doi.org/10.1159/000527433

Özalp Kızılay, D., & Özen, S. (2024). Current Diagnostic Approaches in the Genetic Diagnosis of Disorders of Sex Development. Journal of Clinical Research in Pediatric Endocrinology, 16(4), 0. https://doi.org/10.4274/jcrpe.galenos.2024.2024-3-3

Poudel, D., Aledeh, M., Parveen, N., Ishfaq, M., Golbourn, L.-M., Ali, Y., Lazzari, C., & Kotera, Y. (2025). Compassion in Healthcare: A Narrative Review of Cross-Cultural Perspectives. *Journal of Healthcare Leadership*, *17*(4), 665–680. https://doi.org/10.2147/jhl.s555896

Rapp, M., Mueller-Godeffroy, E., Lee, P., Roehle, R., Kreukels, B. P., Köhler, B., ... & Thyen, U. (2018). Multicentre cross-sectional clinical evaluation study about quality of life in adults with disorders/differences of sex development (DSD) compared to country specific reference populations (dsd-LIFE). *Health and Quality of Life Outcomes*, *16*(1), 54. https://doi.org/10.1186/s12955-018-0881-3

Richter, D., & Dixon, J. (2023). Models of mental health problems: a quasi-systematic review of theoretical approaches. *Journal of Mental Health*, *32*(2), 396-406. https://doi.org/10.1080/09638237.2021.2022638

Roen, K. (2019). Intersex or diverse sex development: Critical review of psychosocial health care research and indications for practice. *The Journal of Sex Research*, *56*(4-5), 511-528. https://doi.org/10.1080/00224499.2019.1578331

Sandberg, D. E., & Gardner, M. (2022). Differences/Disorders of Sex Development: Medical Conditions at the Intersection of Sex and Gender. Annual Review of Clinical Psychology, 18(1), 201–231. https://doi.org/10.1146/annurev-clinpsy-081219-101412

Sandberg, D. E., Gardner, M., & Cohen-Kettenis, P. T. (2012, October). Psychological aspects of the treatment of patients with disorders of sex development. In *Seminars in reproductive medicine* (Vol. 30, No. 05, pp. 443-452). Thieme Medical Publishers. https://doi.org/10.1055/s-0032-1324729

Saxena, A., Paredes-Echeverri, S., Michaelis, R., Popkirov, S., & Perez, D. L. (2022). Using the Biopsychosocial Model to Guide Patient-Centered Neurological Treatments. Seminars in Neurology, 42(2), 080–087. https://doi.org/10.1055/s-0041-1742145

Shah, A. A., Ullah, W., Khan, N. A., Alotaibi, B. A., & Xu, C. (2024). Mapping Rural Household Vulnerability to Flood-Induced Health Risks in Disaster-Stricken Khyber Pakhtunkhwa, Pakistan. *Sustainability*, *16*(23), 10578. https://doi.org/10.3390/su162310578

Steindl, S., Bell, T., Dixon, A., & Kirby, J. N. (2022). Therapist perspectives on working with fears, blocks and resistances to compassion in compassion focused therapy. *Counselling and Psychotherapy Research*, *23*(3), 850–863. https://doi.org/10.1002/capr.12530

Vidal, J., & Soldevilla, J. M. (2022). Effect of compassion-focused therapy on self-criticism and self-soothing: A meta-analysis. The British Journal of Clinical Psychology, 62(1), 70–81. https://doi.org/10.1111/bjc.12394