

# Screening of musculoskeletal disorders and levels of depression in transgender people of Multan

Maryam Wisal<sup>1</sup>, Imran Ahmad Khan<sup>2</sup>, Maliha Khalid Khan<sup>3</sup>

## Abstract

**Objective:** To perceive transgender health issues by evaluating their susceptibility to musculoskeletal problems and depression.

**Method:** The cross-sectional, analytical study was conducted from January to April 2023 at the Government Girls Comprehensive Higher Secondary School, Multan, Pakistan, a school for transgenders, and comprised subjects aged 18-40 years. Body mass index was calculated for each subject, and further data was collected using the Standard Nordic Musculoskeletal Questionnaire, Beck Depression Inventory and Numeric Pain Rating Scale. Data was analysed using SPSS 25.

**Results:** Of the 44 subjects, 26(59%) were transgender females and 18(41%) were transgender males. The overall mean age was  $25.06 \pm 1.53$ . There were 17(39%) subjects who had received education, and 27(61%) were illiterate. Mean depression score was  $24.7 \pm 11.5$ , and mean body mass index was  $22.9 \pm 3.16$ . Mean pain intensity was  $5.81 \pm 2.04$ . Correlation analysis revealed a complex relationship among age, gender, education, occupation and health variables ( $p < 0.01$ ).

**Conclusion:** Musculoskeletal disorders and the level of depression were high and correlated with the occupation of transgender individuals.

**Key Words:** Transgender persons, Musculoskeletal disorders, Social isolation, Depression.

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## Introduction

Transgender people are those in whom engendered expression does not correspond to the sex they were designated at birth.<sup>1</sup> A transgender woman, also known as a male-to-female (MTF) transgender person, is someone who was born with the gender assigned to male, but who now identifies and lives as a woman. Similarly, a transgender man or female-to-male (FTM) transgender individual, is someone who was born with a feminine gender identity, but now identifies and lives as a man.<sup>2</sup> The global frequency of transgender people is relatively high.<sup>3</sup> Transgenderism affects or is present in around 2% of Pakistan's population.<sup>4</sup> 'Khawaja' is the most widely used pronoun for transgender in Pakistan. Every day, they deal with prejudice, abuse and rejection from their families and society. They are marginalised and excluded from mainstream culture because they are seen

as outcasts.<sup>5</sup> Transgender persons' reduced levels of physical activity have been associated with their worsening bodily and mental health. Lower levels of physical exercise could be linked to higher rates of musculoskeletal (MSK) impairment. Gender identity has highly relevant indirect consequences on physical health and musculoskeletal impairment.<sup>6</sup> Transgender adults experience a disproportionate amount of violence and assault and frequently fall victim to hatecrimes.<sup>7</sup> Transgender people endure significant psychological issues, like anxiety, melancholy, self-destructive behaviour, and disordered eating.<sup>8-11</sup> Transgender people experience depression at higher rates than the general population, and there is a need to investigate how the abstract concepts of minority stress, subsist, and identity control may trigger depression in transgender people.<sup>12,13</sup>

Modest, non-homogeneous sample sizes and a dearth of adjusted controls are the main constraints for studies examining mental health in the transgender population. Musculoskeletal disorders (MSDs) and stress-related mental health disorders (MHDs) are serious issues linked to exposure to a variety of psychological and physical impairments.<sup>14</sup> The most often reported MSDs involve the upper limb, neck and back, accounting for 28% of all work-related illnesses.<sup>15</sup> Transgender adults were more than twice reported as likely having poor self-rated health

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<sup>1,3</sup>Ali-Ul-Murtaza, Department of Rehabilitation Sciences, Muhammad Institute of Medical and Allied Sciences, Multan, Pakistan; <sup>2</sup>Department of Pharmacology and Physiology, Muhammad Nawaz Shareef University of Agriculture, Multan, Pakistan.

**Correspondence:** Imran Ahmad Khan.

**Email:** [imranahmadkhandurrani@gmail.com](mailto:imranahmadkhandurrani@gmail.com)

**ORCID ID.** 0000-0002-8761-8879

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and different forms of MSK pain compared by age and educational level differences to the general population.<sup>16</sup> MSDs significantly limit movement, agility and overall functioning. Any evaluation of a transgender person's health needs to take into account their sexual, mental and health history.<sup>17</sup>

The current study was planned to understand transgender health issues by evaluating their susceptibility to MSDs and depression.

### Subjects and Methods

The cross-sectional, analytical study was conducted from January to April 2023 at the Government Girls Comprehensive Higher Secondary School, Multan, Pakistan, a school for transgenders. After approval from

the institutional ethics review committee of Muhammad Institute of Medical and Allied Sciences and the Punjab Educational Department, the sample size was calculated using the Taro Yamane method with 95% confidence interval (CI) and 5% margin of error.<sup>18</sup> The sample was raised using purposive sampling technique. Those included were transgender men, transgender women and non-binary individuals aged 18-40 years who were identified as transgender by the Punjab Health Department. Those who had experienced trauma, were undergoing hormonal or gender-affirming therapy, or not willing to participate were excluded.

After obtaining informed consent from the participants, data was collected using the Standard Nordic Musculoskeletal Questionnaire (SNMQ)<sup>19</sup>, the Beck



**Figure-1:** Participating transgenders seen filling out the study questionnaire.

Depression Inventory (BDI)<sup>20</sup>, and the Numeric Pain Rating Scale (NPRS)<sup>21</sup> (Figure 1). Body mass index (BMI) of all the subjects was also calculated in line with the World Health Organisation (WHO) recommendations specific to South Asia.<sup>22</sup>

Data was analysed using SPSS 25. Categorical data was expressed as frequencies and percentages, while continuous variables were expressed mean  $\pm$  standard deviation. Pearson's correlation coefficient (r) and Spearman's correlation coefficient were used as appropriate.  $P < 0.05$  was considered statistically significant.

## Results

Of the 44 subjects, 26(59%) were transgender females and 18(41%) were transgender males. The overall mean age was  $25.06 \pm 1.53$ . There were 17(39%) subjects who had received education, and 27(61%) were illiterate. In terms

**Table-1:** Demographic, health and anthropometric characteristics of the participants (n=44).

Variables	n (%)
<b>Age (years)</b>	
14-18	6(13.6%)
19-23	11(25%)
24-28	14(31%)
29-33	6(13.6%)
34-38	2(4.54%)
39-43	4(9.09%)
44-48	1(2.27%)
<b>Gender</b>	
Transgender Female	26(59.0%)
Transgender Male	18(40.9%)
<b>Educational Status</b>	
Educated	17(39%)
Uneducated	27(61%)
<b>Occupation</b>	
Sweeper	3(6%)
Compounder	2(4%)
Labour worker	3(6%)
Sex Worker	5(11%)
Make-up Artist	4(9%)
Teacher	5(11%)
Student	6(13%)
Professional Dancer	5(11%)
Company Worker	3(6%)
Manager	2(4%)
Beggar	6(13%)
<b>BMI</b>	
$\leq 18.5$ Underweight	4(9%)
18.5-22 Normal	8(18%)
Up to 22.9 Overweight	10(23%)
$\geq 23$ Obese	22(50%)

BMI: Body mass index.

of occupation, 6(13%) were beggars, and as many were students (Table 1).

Mean depression score was  $24.7 \pm 11.5$ , and mean BMI was  $22.9 \pm 3.16$ . Mean pain intensity was  $5.81 \pm 2.04$ . The affected MSK body region and depression intensity were noted (Table 2).

**Table-2:** Musculoskeletal (MSK) pain and depression data.

Variables	n (%)
<b>Musculoskeletal Regions</b>	
Neck	6(13.3%)
Shoulders	5(11.1%)
Elbows	2(4.4%)
Wrists/Hands	1(2.2%)
Upper Back	5(11.1%)
Lower Back	5(11.1%)
Hips/Thighs	7(15.6%)
Knees	6(13.3%)
Ankles	7(15.6%)
<b>No. of Joints</b>	
Single Joint	11(25%)
Multiple Joints	33(75%)
<b>BDI</b>	
Normal	4(9%)
Mild	9(20%)
Borderline	4(9%)
Moderate	10(22%)
Sever	11(25%)
Extreme	6(13%)
<b>NPRS</b>	
0	0(0%)
1	1(2.27%)
2	1(2.27%)
3	2(4.54%)
4	7(15.9%)
5	8(18.1%)
6	12(27.2%)
7	6(13.6%)
8	2(4.54%)
9	1(2.27%)
10	4(9.09%)

BDI: Beck Depression Inventory, NPRS: Numeric pain rating scale.

Correlation analysis revealed complex relationship among age, gender, education, occupation and health variables (Table 3, Figures 2-3).

## Discussion

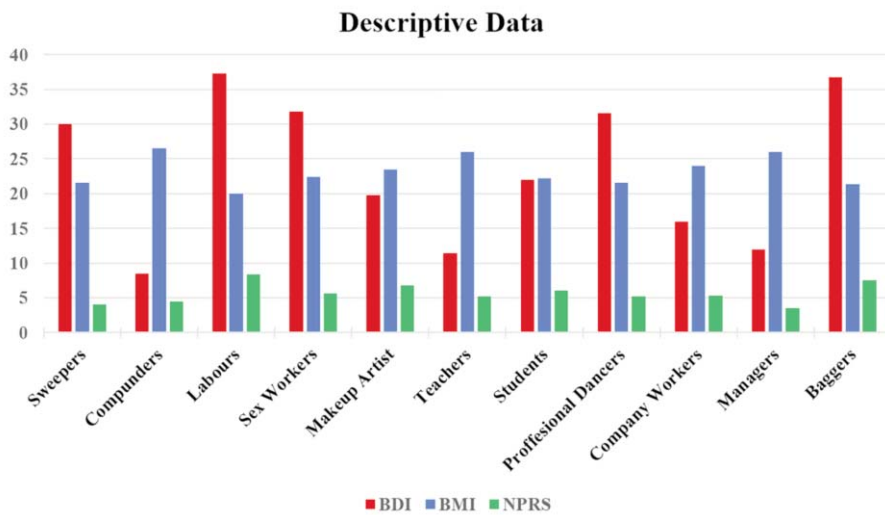
The current study highlights the influence of psychological risk factors on MSDs, emphasising the need to address mental health issues to mitigate MSD outcomes in the general population.

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**Table-3:** Correlation of demographic an anthropometric parameters.

	Age	Gender	BMI	Education	Occupation	NPRS	No. of Joints	MSK	BDI
Age	-	-	-	-	-	-	-	-	-
Gender	0.757**	-	-	-	-	-	-	-	-
BMI	-0.009	-0.056	-	-	-	-	-	-	-
Education	-0.067	-0.186	0.299*	-	-	-	-	-	-
Occupation	0.942**	0.812**	0.906**	0.828**	-	-	-	-	-
NPRS	0.189	-0.039	-0.099	-0.251	0.951**	-	-	-	-
No. of Joints	0.095	-0.160	-0.012	-0.296	0.748**	0.544**	-	-	-
MSK	0.133	0.223	0.938**	-0.540**	0.967**	0.909**	0.307*	-	-
BDI	0.906**	0.214	-0.526**	-0.658**	0.974**	0.307*	0.138	0.402**	-

BMI: Body mass index, BDI: Beck Depression Inventory, NPRS: Numeric pain rating scale, MSK: Musculoskeletal. \*\*: strong positive correlation

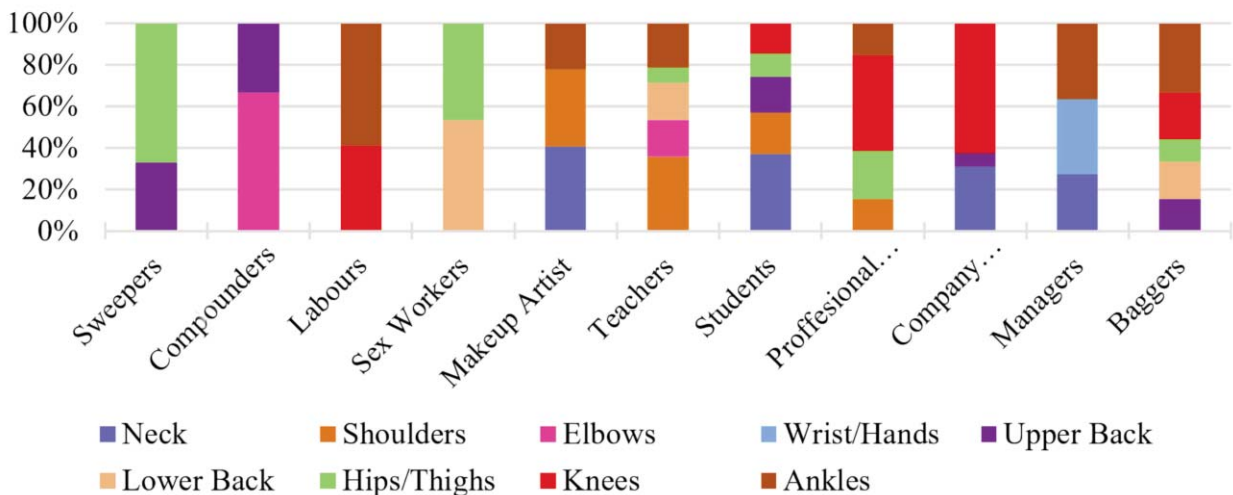


**Figure-2:** BDI, BMI and NPRS data in relation to occupation.  
 BMI: Body mass index, BDI: Beck depression inventory, NPRS: Numeric pain rating scale.

depression among transgender women. Research in South Korea revealed significant health disparities, particularly in suicide behaviour, among transgender individuals.<sup>22</sup>

The current study investigated the nexus involving mental health, occupation, MSDs and depression. Labour-intensive roles, like labourers, baggers and sex workers, chosen for financial sustenance, exhibited heightened depression and MSDs, exacerbated by their demeaning nature, significantly impacting transgender mental health.<sup>22</sup> In contrast, teachers and corporate

### Musculoskeletal Regional Pain



**Figure-3:** Nordic musculoskeletal pain regions in relation to the occupation.



employees are able to cope with their emotions and anxiety much more effectively.<sup>23</sup>

The present study has limitations, including a small sample from a single centre.

## Conclusion

Regional MSK pain, depression and occupation were found to have a complex relationship, necessitating targeted interventions for improved wellbeing of transgender individuals.

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**Authors' Contribution:**

**MW:** Investigation.

**IAK:** Supervision.

**MKK:** Co-supervision. riting.