



## Original Article

# Correlation of demographics profile of patients with genital herpes at a tertiary care hospital in Punjab

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### How to cite this article:

Singh D, Sharma A, Kumar S, Baldi A, Sharma DK. Correlation of demographics profile of patients with genital herpes at a tertiary care hospital in Punjab. *Pharmaspire* 2018;10(4):158-161.

### Source of Support:

Nil,  
**Conflict of Interest:** None declared.

## ABSTRACT

**Introduction:** Genital herpes is a sexually transmitted infection (STI). This STI causes herpetic sores, which are painful blisters (fluid-filled bumps) that can break open and ooze fluid. **Objective:** The present study was designed to investigate the correlation of genital herpes at a tertiary care teaching hospital. **Methodology:** The prospective study was conducted over a period of 8 months. This included 220 genital herpes patients of age between 31 and 40 years who fulfilled the inclusion criteria that were recruited in the study. **Result:** Of 220 cases, 153 were male and 67 were female. Mean of the age of male patients was found to be 35.23 and female was 33.34. The value of age variable, i.e.,  $R^2 = 0.367$  was weak as it found to be  $<0.4$ . Hence, correlation was found to be weak. A positive coefficient indicates that the association is positive, that is, if weight increases, body mass index of the patient also increases. **Conclusion:** Our study showed that the maximum patients were male and they were from 31 to 40 age category, most of the patients were belong to a rural area and they were married and they were doing the private job, most common presenting complaint of patients was genital herpes.

**Keywords:** Genital herpes simplex virus, body mass index, sexually transmitted disease

## INTRODUCTION

Genital herpes is a sexually transmitted infection (STI). This STI causes herpetic sores, which are painful blisters (fluid-filled bumps) that can break open and ooze fluid. It is caused by either of the two herpes simplex viruses (HSV), HSV type 1 (cold sores) or HSV type 2 (genital herpes); this type of the HSV that enters your body through small breaks in the skin or mucous membranes. The mucous membranes are the thin layers of tissue that lines the openings of your body. They can be found in your nose, mouth, and genitals. Once the viruses are inside your body, they incorporate themselves into your cells and then stay in the nerve cells of your pelvis when the sores are not present

virus can also spread. Infants can also infect from infected mother.<sup>[1]</sup> According to the WHO, approximately 60% of worldwide HSV-2 infections are among women. For 2003, it was estimated that there were 23.6 million new HSV-2 infections among 15–49 years old globally, with 12.8 million of those infections among reproductive-age females.<sup>[1-3]</sup>

## METHODOLOGY

The prospective study was conducted over a period of 8 months in the Department of Dermatology, Guru Gobind Singh Medical College and Hospital, Faridkot. This included 220 genital herpes patients of age between 31 and 40 years who fulfilled the inclusion criteria that were recruited in the study. Diseases were diagnosed on the basis of detailed history, demographic data, and age of sexual debut, lifetime number

### Access this article online

<b>Website:</b> www.isfcpsharmaspire.com	<b>P-ISSN:</b> 2321-4732 <b>E-ISSN:</b> XXXX-XXXX
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of sexual partners, clinical examination, and relevant investigations. The data were analyzed by significant statistically analysis that is SPSS ver. 16. The human immunodeficiency virus (HIV) status of all the patients was established with enzyme-linked immunosorbent assay test done as per the NACO guidelines.<sup>[4]</sup> Clinical examination along with all relevant investigations such as complete hemogram, serum biochemistry profile, and complete urine examination. Venereal disease research laboratory test was also done in all patients and controls.<sup>[1,3,4]</sup>

It can be diagnosed by the following tests:

- Viral culture: This test involves taking a tissue sample or scraping of the sores for examination in the laboratory.<sup>[5]</sup>
- Polymerase chain reaction (PCR) test: PCR is used to copy your DNA from a sample of your blood, tissue from a sore, or spinal fluid. The DNA can then be tested to establish the presence of HSV and determine which type of HSV you have.<sup>[5,6]</sup>
- Blood test: This test analyses a sample of your blood for the presence of HSV antibodies to detect a past herpes infection.

The test done with this kit, as compared to the western blot for HSV-2, is 98% specific and 100% sensitive. Linear regression was calculated to know the association between variable coefficients and whether the residuals were positive or negative.<sup>[4-7]</sup>

## RESULTS

Of 220 cases, 153 were male and 67 were female. The age of the cases varied from 31 to 40 years, with a mean age of 34.65 years as shown in Table 1. Mean of the age of male patients was found to be 35.23

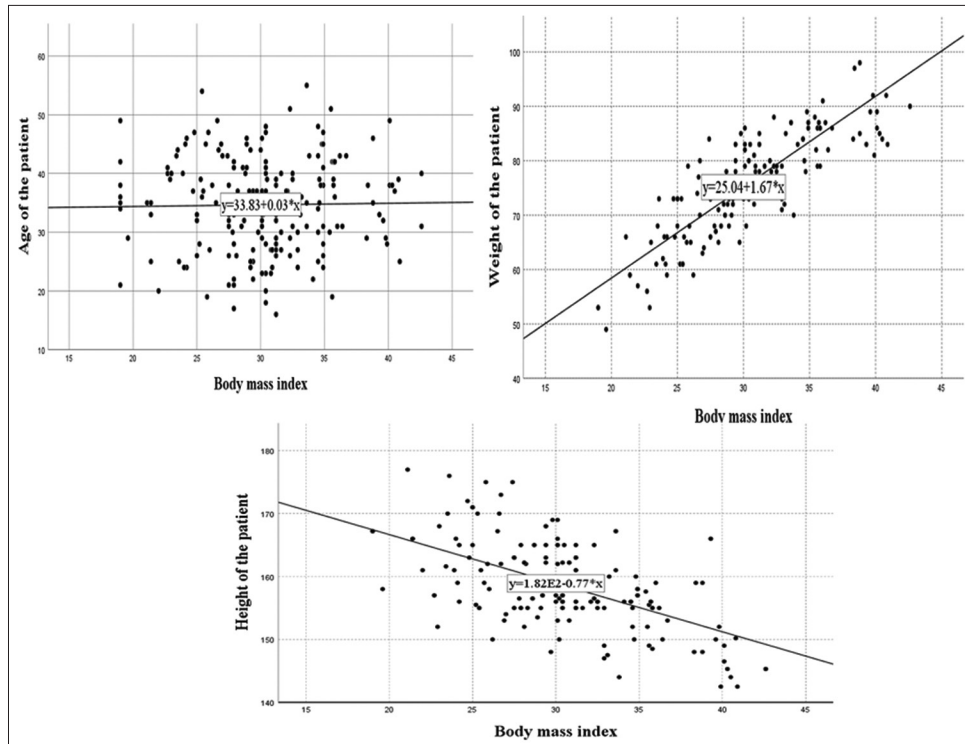
and female was 33.34. Of 220 cases, 158 were married and 62 were unmarried. History of exposure to multiple partners was obtained from all the males. Of 220 cases, 45 patients gave a positive history of genital herpes. Of these 220 cases, 42 patients had active genital pain at the time of the examination. The mode of transmission in most cases was heterosexual 206 (96%) followed by bisexual 14 (6.4%). Patient was sex with 1–5 partner and contact with partner more than 5 times; a history of unprotected sexual contact with partner was elicited in 156 (70.9%) patients. It was observed that 52 (23.6%) partners were having genital ulcer, 148 (67.3%) having extramarital contact and type of partner were maximum friends and relatives, and 135 (61.4%) patients doing sex for fun.

A linear regression was performed to predict relationship of body mass index (BMI) with age of the patient. A significant regression equation was found  $F(1,218) = 1.638$   $P = 0.001$  with an R-value is 0.18 and  $R^2$  is 0.001. Relationship of age of the patient was significant predictors with BMI.<sup>[8-14]</sup>

Coefficients table is the main table for linear regression. Table 3 or Figure 1 shows  $BMI = 29.84 - 0.01$  for age. A negative coefficient

**Table 1: Group statistics**

Variable	Gender	n	Mean	Standard deviation
Age of the patient (years)	Male	153	35.23	7.57
	Female	67	33.34	7.98
Height of the patient (cm)	Male	153	161.00	6.22
	Female	67	158.49	6.87
Weight of the patient (kg)	Male	153	76.85	9.64
	Female	67	72.51	8.83
Body mass index (kg/m <sup>2</sup> )	Male	153	31.01	4.82
	Female	67	28.46	4.78



**Figure 1:** Correlation with age, weight, and height

shows that the association is negative. The value of age variable, i.e.,  $R^2 = 0.367$  was weak as it found to be  $<0.4$ . Hence, correlation was found to be weak. From residuals, statistics discovers the residuals. The mean (standard deviation [SD]) for predicted values (BMI) is 30.23 (0.86%) as shown in Table 2. In a good model, there should be very few residual and our residual here is ranging from  $-11.393$  to  $12.408$  and the maximum Cook's distance is  $0.001-0.056$ . A linear regression was performed to predict relationship of BMI with weight. A significant regression equation was found  $F(1,218) = 3952.90$   $P = 0.001$  with an  $R^2$  of  $0.73$  and  $R$  is  $860$ . Relationship of weight was significant predictors with BMI. Coefficients table is the main table for linear regression, Table 3 or Figure 1 shows  $BMI = -3.201-0.443$  for weight, the value of  $R^2$  for weight variable, i.e.,  $0.739$ . Hence, it was found that correlation was moderate and positive. From residuals, statistics discover the residuals. The mean (SD) for predicted values (BMI) is 30.23 (4.24%). In a good model, there should be very few residual and our residual here is ranging from  $-2.60$  to  $2.91$  and the maximum Cook's distance is  $0.001-0.043$ , as shown in Table 2.

A linear regression was performed to predict relationship of BMI with height. A significant regression equation was found  $F(1,218) = 1834.07$

**Table 2: Residual regression**

Residuals statistics	Minimum	Maximum	Mean	Standard deviation	n
Relationship of body mass index with age					
Predicted value	30.02	30.46	30.23	0.086	220
Standard predicted value	-2.41	2.632	0.000	1.00	220
Adjusted predicted value	29.93	30.63	30.23	0.099	220
Residual	-11.39	12.408	0.000	4.94	220
Standard residual	-2.30	2.506	0.000	0.99	220
Cook's distance	0.001	0.056	0.004	0.00	220
Relationship of body mass index with weight					
Predicted value	18.49	40.18	30.23	4.24	220
Standard predicted value	-2.76	2.342	0.000	1.00	220
Adjusted predicted value	18.44	40.22	30.23	4.24	220
Residual	-6.58	7.35	0.00	2.52	220
Standard residual	-2.60	2.91	0.00	0.99	220
Cook's distance	0.001	0.043	0.004	0.00	220
Relationship of body mass index with height					
Predicted value	22.13	37.45	30.23	2.89	220
Standard predicted value	-2.80	2.49	0.00	1.00	220
Adjusted predicted value	22.17	37.3	30.2	2.89	220
Residual	-10.96	12.2	0.00	4.00	220
Standard residual	-2.73	3.0	0.00	0.99	220
Cook's distance	0.001	0.04	0.00	0.00	220

$P = 0.001$  with an  $R^2$  of  $0.343$  and  $R$  is  $0.586$ . Relationship of height was significant predictors with BMI. Coefficients table is the main table for linear regression. This is shown in Table 3 and Figure 1 shows  $BMI = 100.7-6.6$  for height. The value of  $R^2$  for height variable was  $0.343$ . Hence, the correlation was weak and negative coefficient due to  $R$ -value in between  $0.1$  and  $0.3$ , i.e. weak. From residuals, statistics discover the residuals. The mean (SD) for predicted values (BMI) is 30.23 (2.894%) as shown in Table 2. In a good model, there should be very few residual and our residual here is ranging from  $-10.96$  to  $12.285$  and the maximum Cook's distance is  $0.001-0.049$ . No outliers were found during this test.

## DISCUSSION

Genital ulcerative disease is a potential risk factor for acquiring HIV infection. Few studies revealed that genital herpes is currently the most common genital ulcerative disease. More recently, several groups have reported that serological evidence of HSV type 2 infections is associated with increased HIV-1 infection.<sup>[15-7]</sup> Due to the sample size, it was not possible to determine the correlates of each STI within the different sites which could be different due to heterogeneity in behavior patterns and historical trajectory of infections.<sup>[15-20]</sup> Face-to-face interviews could lead to misreporting due to social desirability bias. Finally, we were able to explore the impact of people who were missed in the survey on study outcomes as the demographic variables between those who migrated out, were present but refused to participate and participate demographic variables to differ between those who were missed from the survey and those who participated.<sup>[8,21-25]</sup> Our study revealed that male patient was 153 (69.5%) and a female patient was 67 (30.5%), the study was opposed from Mohanty *et al.* (1995),<sup>[19,13,26]</sup> it was found to be 407 (78.8%) was male and 109 (21.13%) were female; a linear regression was performed to predict relationship of BMI with age. Relationship of age weight height of the patient was significant predictors with BMI.

A positive coefficient indicates that the association is positive, that is, if weight increases, BMI of the patient also increases a negative coefficient indicates that the association is negative, that is, if height decreases BMI of the patient also decreases. The residuals statistics tell us about the residuals.<sup>[13,14,27-31]</sup>

## CONCLUSION

Genital herpes was the most common ulcerative STI, while genital wart was the most common non-ulcerative STI and estimates of

**Table 3: Coefficients**

Model	Unstandardized coefficients		Standardized coefficients	t	Significant
	B	Standard error	Beta		
1.					
Constant	29.84	1.53		19.41	0.001
Age of the patient	0.011	0.043	0.018	0.25	0.796
2.					
Constant	-3.20	1.35		-2.36	0.019
Weight of the patient	0.44	0.018	0.860	24.86	0.001
3.					
Constant	100.74	6.61		15.23	0.001
Height of the patient	-0.444	0.042	-0.586	-10.668	0.001

the linear relationship between age, weight, and height with BMI. The estimates highlight the urgent need for the public health community to ensure that well-recognized effective interventions for STI prevention, screening, diagnosis, and treatment should be more widely available. Improved estimation methods are needed.<sup>[9-14]</sup> The effectiveness of antiviral treatment for genital herpes should be investigated in core groups at high risk of HIV/STD.<sup>[14,26,27,30,31]</sup> Our study showed that the maximum patients were male and they were from 31 to 40 age category; most of the patients were belong to a rural area and they were married and they were doing the private job and maximum patients were educated with the 12<sup>th</sup> class, the most common presenting complaint of patients was genital herpes.<sup>[27-35]</sup> Health programs should be still more focused on creating awareness of the minor STIs and to remove the stigma from the society so that the patients attend the proper health-care facilities in the early stage itself for treatment thereby and as a result complications and further transmission of the STIs can be avoided.<sup>[15-18,36]</sup>

## Ethical approval

The study was conducted after approved by the Institutional Ethics Committee of Indo Soviet Friendship College of Pharmacy, Moga, India.

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