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Research Article

Sex Work and Health Problems in the Sexual and Gender Minority Population: Analysis of a Population Survey in Peru

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Background. Sexual and gender minorities (SGM) who perform sex work are susceptible to sexually transmitted infections and substance abuse that can lead to chronic diseases, as well as discrimination and violence that deteriorate their mental health. *Aim.* To evaluate the association between a history of sex work and health problems in the sexual and gender minority population from Peru. *Methods.* A cross-sectional study was conducted based on the data of the first virtual survey for LGBTI people in Peru in 2017. The prevalence of self-reported chronic diseases, infectious diseases, and mental health problems in the last 12 months and their association with the history of sex work were evaluated. Adjusted prevalence ratios (APR) with 95% confidence intervals were calculated using Poisson regression with robust variance. *Results.* We analyzed data from 10629 people, of which 7.0% performed sex work. The prevalence of chronic diseases, infectious diseases, and mental health problems was 13.0%, 10.4%, and 23.7%, respectively. A significant association was found between a history of sex work with chronic diseases (APR: 1.25, 95% CI: 1.04–1.50), infectious diseases (APR: 2.11, 95% CI: 1.86–2.41), and mental health problems (APR: 1.27, 95% CI, 1.12–1.45). *Conclusion.* We found evidence that chronic diseases, infectious diseases, and mental health problems are associated with sex work history among the SGM population in Peru. There is a need to provide health interventions focused on disease prevention and control for this population.

1. Introduction

Sexual and gender minorities (SGM) are a population that includes lesbian, gay, bisexual, transgender, intersex, and other individuals whose sexual orientation or gender identity differs from the majority [1]. Sexual orientation (e.g., gay, lesbian, and bisexual) is defined as the emotional, romantic, or sexual attraction that a person feels toward other people. On the other hand, gender identity (e.g., transgender and nonbinary gender) refers to each individual's perception of their gender, which may be the same or different from their biological sex [2].

The SGM population is at greater risk of chronic diseases, infectious diseases, and mental health problems. Studies conducted within the United States population found that SGM had a higher prevalence of HIV, anxiety, depression, and chronic diseases such as asthma, arthritis, diabetes, kidney disease, hypertension, cardiovascular disease, and chronic obstructive pulmonary disease compared to non-SGM [3, 4]. These health problems may be related to

the health inequalities faced by this population [5] and unhealthy behaviors, such as the consumption of alcohol, tobacco, and drugs [6]. In addition, the discrimination and violence suffered by this community have an impact on their physical and mental well-being [7].

In Peru, it is estimated that more than 1.7 million adults are part of the SGM population [8], of which approximately 6.4% of them perform sex work [9]. The majority of transwomen who engage in sex work use it as their primary source of income [10]. The SGM who perform sex work are potentially more exposed to infectious diseases. A study conducted in Lima, the capital of Peru, revealed that HIV prevalence is 4.5% among male sex workers, mostly bisexuals, and reaches 16.6% among transgender women, mostly homosexuals [11]. It is known that sex work increases the prevalence of chronic diseases and mental health problems [12, 13]; however, in Peru, the available scientific evidence is limited.

Knowing the health problems that afflict the SGM population and how a history of sex work influences the prevalence of these problems could help to implement prevention measures, control interventions, and public health policies to improve the quality of life of this population. Therefore, the objective of the present study was to evaluate the association between the history of sex work and chronic diseases, infectious diseases, and mental health problems in the sexual and gender minority population from Peru.

2. Methods

2.1. Design and Population.
A cross-sectional analytical study was conducted using a secondary database derived from the first virtual survey for LGBTI people in Peru by the National Institute of Statistics and Informatics (INEI). The survey used a nonprobabilistic convenience sampling method because there was insufficient information about the actual size of the Peruvian SGM population to calculate a representative sample at the time of its administration. The survey was disseminated virtually in Peru's 24 departments and the Constitutional Province of Callao from May 17 to August 17, 2017, through the INEI website and social networks. The participation of the leading LGBTI organizations in Peru was necessary for developing and disseminating the survey. The anonymized data are available on the INEI website (https://iinei.inei.gob.pe/microdatos/).

The initial population surveyed included people aged 18 and over, residing in urban and rural areas of the Peruvian territory, who identify themselves as members of the LGBTI community (lesbians, gays, bisexuals, trans, and intersex) and with access to the Internet. Most survey respondents were residents of Metropolitan Lima (65%). Participants with incomplete data on the variables of interest were excluded.

2.2. Variables.
The dependent variable consisted of three health problems: chronic diseases evaluated through the question (P105_1), "In the last 12 months, did you have any chronic disease such as (asthma, chronic bronchitis or emphysema, arterial hypertension or diabetes mellitus)?";

the infectious diseases that were evaluated with the question (P105_2), "In the last 12 months, did you have any infectious disease such as (tuberculosis, sexually transmitted infections, HIV/AIDS)?"; and the mental health problems that were measured through the question (P105_3), "In the last 12 months, did you have any mental health problems such as (depression, anxiety)?" The answers to all these questions were dichotomous (no, yes).

The independent variable was the history of sex work, which was evaluated through the question (Q134), "At some point in your life, have you done sex work?" This variable was recategorized as "Yes" to those who accepted to have performed sex work by their own decision or by forced decision and "No" to those who never did this type of work.

In addition, possible confounding variables were included, which were determined with a causal diagram (supplementary 1), as follows: age, biological sex (male and female), gender identity (cisgender, transgender, and nonbinary/other), education level (no education/elementary, secondary, and higher education), and romantic partner (no partner, with a partner, and multiple partners). Regarding sexual orientation (heterosexual, gay, lesbian, bisexual, pansexual, and asexual/other), this variable was analyzed with the categories presented in the secondary database, which only separated homosexuals into gays and lesbians.

2.3. Statistical Analysis.
The database was downloaded from the INEI website, and the RStudio package (version 4.2.2) was used for statistical analysis. Categorical variables were reported by their absolute values and percentages. In contrast, the age variable was reported using the median and the interquartile range, as it did not have a normal distribution. The prevalence of chronic diseases, infectious diseases, and mental health problems was calculated for the total sample. The Pearson's chi-squared and Mann–Whitney U tests were used to compare groups defined by the presence of health problems with the categorical and numerical independent variables, establishing a significance value of $p < 0.05$. Unadjusted and adjusted prevalence ratios (APR) with 95% confidence intervals (95% CI) were calculated with Poisson regression using robust variance because outcomes (chronic disease, infectious disease, or mental health problems) were binary. The confounding variables mentioned above were included in the adjusted model. Likewise, an interaction analysis was performed to explore the association of the history of sex work and sexual orientation simultaneously with each described health problem. Initially, we add the interaction between the history of sex work and sexual orientation to the fitted model and then calculate the interaction terms by multiplying the prevalence ratios: PR sex work, sexual orientation = PR sex work × PR sexual orientation × PR sex work ∗ sexual orientation.

3. Results

3.1. General Characteristics of the Study Sample.
The initial population surveyed included 12026 people, of whom 1397 (11.6%) participants were excluded for presenting

incomplete data on the variables of interest. Therefore, 10629 participants were included as the final sample. The median age was 25 (IQR, 21–30) years, 52.8% were biologically male, almost half reported having higher education (49.4%), most self-identified ethnically as mestizo (69.6%), and less than a third reported not having health insurance (29.4%). The predominant sexual orientation and gender identity were gay (41.9%) and cisgender (87.2%), respectively (Table 1).

3.2. History of Sex Work and Health Problems.

Of the participants, 7.0% reported having a history of sex work, of which 84.7% (633/747) were biologically male, 58.4% (436/747) were of gay sexual orientation, 72.0% (538/747) identified as cisgender, and 51.3% (383/747) did not have a romantic partner (Table 1). Of the participants with a history of sex work, 83.7% did it by own decision and 16.3% by forced decision. Those of female biological sex, heterosexual orientation, and nonbinary/other gender identities reported a higher frequency of forced sex work (supplementary 2).

The primary health problems reported in the last 12 months by those surveyed were mental health problems (23.7%), followed by chronic diseases (13.0%) and infectious diseases (10.4%). The prevalence of chronic diseases and mental health problems was higher in respondents with pansexual orientation, 15.9% and 44.0%, respectively. In contrast, the prevalence of infectious diseases was higher in gay sexual orientation (19.9%) (Table 1).

3.3. Prevalence of Health Problems According to Characteristics of the Study Sample.

Table 2 is the bivariate analysis that relates the general characteristics with the health problems in the last 12 months. The prevalence of chronic diseases was higher in people with a history of sex work (16.2% vs. 12.8%, $p = 0.009$), mainly in those who performed sex work by forced decision (23.0% vs. 14.9%, $p = 0.038$). The participants with nonbinary/other gender identities had the highest frequency of chronic diseases (17.7%, $p < 0.001$), and those with no education/elementary had a higher prevalence of chronic diseases (21.9%) than those with higher education (13.3%), which was statistically significant ($p = 0.002$).

The prevalence of infectious diseases was more than three times higher in people with a history of sex work (29.2 vs. 9.0%, $p < 0.001$). The prevalence was more frequent in the male biological sex (18.5% vs. 1.4%, $p < 0.001$) and almost three times higher in participants with multiple partners (23.9%) compared to participants with a partner (8.6%), which was statistically significant ($p < 0.001$).

The prevalence of mental health problems was higher in people with a history of sex work (27.4% vs. 23.4%, $p = 0.015$), and those who performed forced sex work had almost twice the prevalence of mental health problems (43.4 vs. 24.3, $p < 0.001$). People with nonbinary/other gender identities had a higher frequency of mental health problems (33.7%, $p < 0.001$), and those without a partner had a higher prevalence than those with a partner (27.1 vs. 20.4, $p < 0.001$).

Likewise, those with health insurance had a higher prevalence of chronic diseases (13.6% vs. 11.7%, $p = 0.010$) and infectious diseases (11.3% vs. 8.4%, $p < 0.001$) but a lower prevalence of mental health problems (21.8% vs. 28.4%, $p < 0.001$) than those without health insurance (Table 2).

3.4. Association between Health Problems in the Last 12 Months and a History of Sex Work.

In the SGM population from Perú, the prevalence of chronic diseases in those participants with a history of sex work was 25% (95% CI: 1.04–1.50) higher compared to those who did not perform sex work. Regarding infectious diseases, the prevalence in those participants with a history of sex work was 2.11 times higher (95% CI: 1.86–2.41) compared to those who did not perform sex work. Likewise, the prevalence of mental health problems in those participants with a history of sex work was 27% higher (95% CI: 1.12–1.45) compared to those who did not perform sex work. In the analysis by subgroups, it was observed that those who performed sex work by forced decision had a higher prevalence of mental health problems compared to those who performed sex work by own decision (APR: 1.77; 95% CI: 1.38–2.27) (Table 3).

In the interaction model, an increase in the effect of sex work on chronic diseases (APR: 2.57; 95% CI: 1.49–4.42) and infectious diseases (APR: 7.75; 95% CI: 3.04–19.72), but a decrease with mental health problems (APR: 1.12; 95% CI: 0.64–1.98) which was not statistically significant, was observed. People with gay, lesbian, bisexual, pansexual, and asexual/other sexual orientations who performed sex work had 1.81, 3.37, 1.02, 2.00, and 1.21 times higher prevalence of having chronic diseases than heterosexuals who did not perform sex work. Regarding infectious diseases, the people with gay, lesbian, bisexual, pansexual, and asexual/other sexual orientations who performed sex work had 9.78, 4.02, 8.69, 13.95, and 9.10 times higher prevalence compared to heterosexuals who did not perform sex work. Finally, gay, lesbian, bisexual, pansexual, and asexual/other sexual orientations who performed sex work had 1.61, 1.47, 1.72, 1.78, and 2.44 times higher prevalence of mental health problems compared to heterosexuals who did not perform sex work (Table 4).

4. Discussion

The present study found an association between the history of sex work and chronic diseases, infectious diseases, and mental health problems in the SGM population from Peru. According to the literature, it is known that sex work exposes people to a higher risk of diseases and substance abuse, causing the deterioration of physical and mental health [12].

In our study, we found that 7.0% of the participants reported having performed sex work. This percentage was lower than in another study conducted in Peru, which reported a prevalence of sex work of 54.9%; however, this study recruited participants from low-income neighborhoods in the city of Lima, with economic needs that increase the probability of engaging in sex work. In contrast to our study, which included participants from all over Peru, the

Table 1: General characteristics according to the history of sex work in the sexual and gender minority population from Peru (n = 10629).

Characteristics	N (%)	Sex work		p*
		No, n = 9882 (93.0%)	Yes, n = 747 (7.0%)	
Age (median (IQR))	25 [21–30]	25 [21–30]	26 [22–33]	<0.001
Biological sex				<0.001
Male	5616 (52.8)	4983 (88.7)	633 (11.3)	
Female	5013 (47.2)	4899 (97.7)	114 (2.3)	
Sexual orientation				<0.001
Heterosexual	440 (4.1)	376 (85.5)	64 (14.5)	
Gay	4449 (41.9)	4013 (90.2)	436 (9.8)	
Lesbian	2293 (21.6)	2251 (98.2)	42 (1.8)	
Bisexual	2640 (24.8)	2518 (95.4)	122 (4.6)	
Pansexual	536 (5.1)	500 (93.3)	36 (6.7)	
Asexual/other	271 (2.5)	224 (82.7)	47 (17.3)	
Gender identity				<0.001
Cisgender	9271 (87.2)	8733 (94.2)	538 (5.8)	
Transgender	574 (5.4)	434 (75.6)	140 (24.4)	
Nonbinary/other	784 (7.4)	715 (91.2)	69 (8.8)	
Education level				<0.001
No education/elementary	155 (1.5)	105 (67.7)	50 (32.3)	
Secondary	5220 (49.1)	4861 (93.1)	359 (6.9)	
Higher education	5254 (49.4)	4916 (93.6)	338 (6.4)	
Romantic partner				<0.001
No partner	5153 (48.5)	4770 (92.6)	383 (7.4)	
With a partner	5334 (50.2)	5029 (94.3)	305 (5.7)	
Multiple partners	142 (1.3)	83 (58.5)	59 (41.5)	
Ethnic self-identification				<0.001
Mestizo	7396 (69.6)	6903 (93.3)	493 (6.7)	
White	1862 (17.5)	1757 (94.4)	105 (5.6)	
Other	1371 (12.9)	1222 (89.1)	149 (10.9)	
Health insurance				0.110
No	3121 (29.4)	2882 (92.3)	239 (7.7)	
Yes	7568 (70.6)	7000 (93.2)	508 (6.8)	

IQR = interquartile range. *p values were calculated by Pearson's chi-squared test for categorical variables and by Mann–Whitney U test for age.

majority of them had an adequate level of education and health insurance coverage, suggesting a better socioeconomic situation [14]. In countries such as France and Canada, the prevalence of sex work was 14% and 22.1%, respectively [15, 16]. Developed countries with a higher gross domestic product per capita may tend to attract a more significant number of migrants who opt for sex work to improve their economic level [17]. Likewise, the prevalence of sex work in our study may not reflect the actual figure since the participants were selected using a nonprobability sample by convenience, and information was collected through self-report virtually, excluding sex workers without Internet access.

Another finding of our study was that the male SGM population was more likely to have performed sex work. Male sex workers, mostly homosexual or bisexual, are known to be primarily motivated by economic well-being, drug use, and sexual pleasure [18]. On the other hand, the female biological sex SGM group most frequently reported forced sex work. This could be related to sex trafficking, in which the victims are mainly women [19].

Participants with a history of sex work had a higher prevalence of chronic diseases. It is known that SGM sex workers are more likely to be chronic smokers, drug users,

and excessively alcoholic beverages, which are risk factors for developing chronic diseases [20]. In particular, we found that lesbians with a history of sex work were three times more likely to have a chronic disease than heterosexuals who had never performed sex work. This result is similar to what was found by Gonzales Gilbert et al., where lesbians were more likely to suffer from multiple chronic conditions than heterosexual women [21]. This could be related to the greater probability of lesbians suffering from obesity since they tend to be more satisfied with their bodies and weight, downplaying the health problems that obesity brings with it [22]. In addition, lesbians tend to be less considered in health interventions with respect to other sexual minority groups [23]; therefore, it is necessary to promote equitable, healthy lifestyle campaigns that encourage physical activity and healthy eating and reduce the consumption of harmful substances in the SGM population. Another issue to consider is the possibility that stigma, discrimination, and stress associated with sex work may be the cause of chronic diseases. It is known that mental health problems may increase the prevalence of hypertension, which is a risk factor for multiple chronic diseases [24]; therefore, these populations must receive mental health care to avoid long-term health problems.

Table 2: Bivariate analysis that relates the general characteristics with health problems in the sexual and gender minority population from Peru ($n = 10629$).

Variables	Chronic diseases		Infectious diseases		Mental health problems	
	$N = 1384$ (13.0%)	p^*	$N = 1108$ (10.4%)	p^*	$N = 2522$ (23.7%)	p^*
Sex work		0.009		<0.001		0.015
No	1263 (12.8)		890 (9.0)		2317 (23.4)	
Yes	121 (16.2)		218 (29.2)		205 (27.4)	
Reason for sex work		0.038		0.499		<0.001
Own decision	93 (14.9)		186 (29.8)		152 (24.3)	
Forced decision	28 (23.0)		32 (26.2)		53 (43.4)	
Age (median (IQR))	26 [22–32]	<0.001	27 [23–33]	<0.001	23 [20–28]	<0.001
Biological sex		0.067		<0.001		<0.001
Male	699 (12.4)		1040 (18.5)		1159 (20.6)	
Female	685 (13.7)		68 (1.4)		1363 (27.2)	
Sexual orientation		0.105		<0.001		<0.001
Heterosexual	50 (11.4)		20 (4.5)		85 (19.3)	
Gay	549 (12.3)		887 (19.9)		869 (19.5)	
Lesbian	322 (14.0)		19 (0.8)		448 (19.5)	
Bisexual	340 (12.9)		120 (4.5)		797 (30.2)	
Pansexual	85 (15.9)		38 (7.1)		236 (44.0)	
Asexual/other	38 (14.0)		24 (8.9)		87 (32.1)	
Gender identity		<0.001		0.170		<0.001
Cisgender	1161 (12.5)		986 (10.6)		2111 (22.8)	
Transgender	84 (14.6)		50 (8.7)		147 (25.6)	
Nonbinary/other	139 (17.7)		72 (9.2)		264 (33.7)	
Education level		0.002		0.119		0.452
No education/elementary	34 (21.9)		21 (13.5)		40 (25.8)	
Secondary	652 (12.5)		567 (10.9)		1213 (23.2)	
Higher education	698 (13.3)		520 (9.9)		1269 (24.2)	
Romantic partner		0.435		<0.001		<0.001
No partner	653 (12.7)		616 (12.0)		1399 (27.1)	
With a partner	709 (13.3)		458 (8.6)		1086 (20.4)	
Multiple partners	22 (15.5)		34 (23.9)		37 (26.1)	
Ethnic self-identification		0.292		0.001		0.023
Mestizo	938 (12.7)		795 (10.7)		1774 (24.0)	
White	257 (13.8)		150 (8.1)		400 (21.5)	
Other	189 (13.8)		163 (11.9)		348 (25.4)	
Health insurance		0.010		<0.001		<0.001
No	365 (11.7)		261 (8.4)		885 (28.4)	
Yes	1019 (13.6)		847 (11.3)		1637 (21.8)	

IQR = interquartile range. $^*p$ values were calculated by Pearson's chi-squared test for categorical variables and by Mann–Whitney U test for age.

Respondents who reported having engaged in sex work had twice the prevalence of infectious diseases. This finding agrees with the results obtained by Berg et al., who found a significant association between the sale of sex and the probability of contracting HIV and bacterial STIs [25]. It should be noted that, according to Biello et al., more than 50% of sex workers often engage in unprotected sex [18], possibly due to the difficulties they face in trying to persuade their clients to use condoms, as reported by Bharat et al., where less than 20% of sex workers can convince their clients to use barrier methods, increasing the risk of sexually transmitted infections [26]. Likewise, sex workers do not adopt vaccination measures to prevent infectious diseases; one study reported that only 7.2% of sex workers completed the hepatitis B vaccination schedule [27]. Therefore, it is essential to reinforce prevention measures, including vaccination and barrier methods, with a healthcare focus on sex workers in the SGM population.

It was found in our study that having a history of sex work was associated with a higher prevalence of mental health problems similar to that reported by Puri et al., where they indicated that sex workers are 2.56 times more likely to suffer from mental illnesses such as depression and anxiety [28]. Furthermore, our findings indicated that having any minority sexual orientation and doing sex work is, on average, twice as likely to have a mental health problem compared to heterosexuals who have never done sex work. This can be explained by the stigmatization and discrimination that sex workers and SGM receive from society and health workers, which makes them less likely to seek medical care and more likely to hide their sexual orientation or occupation [29]. Also, low utilization of health services may be attributed to the belief that mental health care is unnecessary and that the costs associated with such services should be reduced [6, 30]. It is essential to mention that any public health intervention aimed at the SGM population may be ineffective in an environment of discrimination and social stigma.

Table 3: Association between history of sex work and health problems in the sexual and gender minority population from Peru ($n = 10629$).

	Prevalence	Unadjusted			Adjusted*		
	N (%)	PR	CI 95%	p	PR	CI 95%	p
Chronic diseases ($n = 1384$)							
Sex work							
No	1263 (12.8)	Ref.			Ref.		
Yes	121 (16.2)	1.27	1.07–1.50	0.007	1.25	1.04–1.50	0.016
Reason for sex work							
Own decision	93 (14.9)	Ref.			Ref.		
Forced decision	28 (23.0)	1.54	1.06–2.24	0.024	1.40	0.96–2.06	0.084
Infectious diseases ($n = 1108$)							
Sex work							
No	890 (9.0)	Ref.			Ref.		
Yes	218 (29.2)	3.24	2.85–3.68	<0.001	2.11	1.86–2.41	<0.001
Reason for sex work							
Own decision	186 (29.8)	Ref.			Ref.		
Forced decision	32 (26.2)	0.88	0.64–1.22	0.441	1.07	0.78–1.47	0.665
Mental health problems ($n = 2522$)							
Sex work							
No	2317 (23.4)	Ref.			Ref.		
Yes	205 (27.4)	1.17	1.04–1.32	0.011	1.27	1.12–1.45	<0.001
Reason for sex work							
Own decision	152 (24.3)	Ref.			Ref.		
Forced decision	53 (43.4)	1.79	1.40–2.28	<0.001	1.77	1.38–2.27	<0.001

PR = prevalence ratio; CI 95% = 95% confidence interval. *PR was adjusted for age, biological sex, sexual orientation, gender identity, education level, and romantic partner.

Table 4: Association between history of sex work and health problems adding the interaction of sexual orientation in the sexual and gender minority population from Peru ($n = 10629$).

	Chronic diseases		Infectious diseases		Mental health problems	
	PR*	CI 95%	PR*	CI 95%	PR*	CI 95%
Sex work						
No	Ref.		Ref.		Ref.	
Yes	2.57	1.49–4.42	7.75	3.04–19.72	1.12	0.64–1.98
Sexual orientation						
Heterosexual	Ref.		Ref.		Ref.	
Gay	1.44	1.01–2.05	5.26	2.38–11.67	1.21	0.96–1.53
Lesbian	1.56	1.11–2.19	1.33	0.49–3.58	0.95	0.76–1.19
Bisexual	1.52	1.09–2.13	2.67	1.16–6.14	1.52	1.23–1.89
Pansexual	1.69	1.16–2.48	4.50	1.85–10.97	2.09	1.66–2.63
Asexual/other	1.57	1.00–2.47	3.01	1.14–8.00	1.50	1.13–2.00
With interaction						
Sex work ∗ heterosexual	Ref.		Ref.		Ref.	
Sex work ∗ gay	0.49	0.27–0.88	0.24	0.09–0.62	1.19	0.66–2.15
Sex work ∗ lesbian	0.84	0.42–1.71	0.39	0.04–3.50	1.38	0.67–2.85
Sex work ∗ bisexual	0.26	0.12–0.57	0.42	0.15–1.16	1.01	0.54–1.87
Sex work ∗ pansexual	0.46	0.19–1.10	0.40	0.14–1.20	0.76	0.37–1.57
Sex work ∗ asexual/other	0.30	0.11–0.80	0.39	0.12–1.25	1.45	0.72–2.90

PR = prevalence ratio; CI 95% = 95% confidence interval. Heterosexual term refers to people who are part of the sexual and gender minority, who have heterosexual orientation but do not consider themselves cisgender. *The model included the interaction between sexual orientation and history of sex work adjusted for age, biological sex, gender identity, education level, and romantic partner.

Our findings revealed that forced sex work is associated with an increase in mental health problems. People forced into sex work are often kidnapped or tricked into working in the prostitution industry, which exposes the victim to violence, threats, and substance abuse [31]. Cange et al. found that victims of forced sex work have a high prevalence of depression, alienation, and suicidal ideation; furthermore, the majority of forced sexual relations that occurred were without the use of condoms, increasing the risk of sexually transmitted infections [32]. For this reason, the medical, police, and governmental institutions must be alert and prepared to offer help to these victims, providing them with a safe environment and psychological support.

In our study, 13% of all participants reported any chronic disease. In the United States, the most prevalent chronic diseases in the sexual minority population are asthma

(34.1%), arthritis (21.4%), hypertension (15.3%), and chronic bronchitis (10.4%) [29]. The presence of eating disorders and consumption of harmful substances in this population can generate physiological changes that predispose to said diseases [33]. Regarding infectious diseases, 10.4% of those surveyed reported them, although the percentage for each type of infection was not determined. One study reported that the prevalence of HIV in Peru was 15.7%; however, this study only included homosexual and bisexual young people; this part of the population is often more sexually active [34]. In addition, frequenting places of prostitution such as saunas, brothels, pornographic cinemas, and hotels for hours at a time increases the risk of infectious diseases in homosexual and bisexual men [35]. On the other hand, mental health problems were reported by 23.7% of the participants, being lower than the prevalence of depression (87%) and anxiety (68%) found in India [36]. Mental health problems can be influenced by internal factors such as social stigma or external factors such as discrimination, violence, and sexual abuse.

The prevalence of sex work was higher in those without health insurance. This picture does not differ from that observed in another study, where those who perform sex work suffer from institutional barriers related to legality that limit their access to health care [37]. In addition, our findings indicate that those without health insurance report lower rates of chronic disease and infectious disease than those with health insurance. This lower rate may be the result of those without health insurance simply not knowing that they have an infectious or chronic disease until they manifest symptoms, so they do not receive preventive measures or timely treatment, as evidenced by Pillay et al., where the lack of use of HIV preexposure prophylaxis is linked to the absence of medical prescription [38]. Similarly, it was noted that sexual minorities with access to healthcare may delay seeking help due to negative experiences with healthcare personnel or difficulties in scheduling a medical appointment [39]; these obstacles hinder the early diagnosis of diseases. The authorities must ensure that sex workers of SGM populations have access to health insurance to guarantee adequate and timely medical care.

The COVID-19 pandemic has greatly changed the sex work industry. Many sex workers moved to virtual platforms to sell sexual content, which reduced the risk of infectious diseases but increased mental health problems as sex workers were more isolated from their usual environment and friendships [40]. It is necessary to implement new prevention and control strategies adapted to the new reality left by the COVID-19 pandemic; these strategies should be oriented equitably to all groups of the SGM population that perform sex work. In addition, it is necessary to train health personnel in medical care without discrimination or stigmatization of SGM to provide timely service that can improve their quality of life. Also, it is crucial to establish primary care programs and public health policies focused on this population. Long-term studies exploring the association between sex work and health problems are recommended,

using validated tools for the collection of variables and accurate diagnoses to report specific diseases.

The results should consider some limitations. First, due to the nature of the study and the use of a secondary database, only confounding variables that had been collected by the national survey were included in the fitted model. Residual confounding by other unmeasured variables is possible. Second, the survey had a nonprobabilistic sampling and was conducted virtually, limiting the inclusion of participants who do not have Internet access, so the results cannot be extrapolated to the entire SGM population in Peru. Third, the cross-sectional design of the study precludes the establishment of causal relationships between the history of sex work and health problems; only health problems in the last 12 months were measured, making it impossible to know the patient's condition before that cut-off point, and this limitation establishes a different time frame than the history of sex work, meaning that in some cases, the sex work and health problems may be widely separated in time, limiting the inference of association. Fourth, the variables were measured by self-report; therefore, information and social desirability biases may occur in the participants when not answering the question truthfully demonstrating the history of sex work. Finally, chronic diseases, infectious diseases, and mental health problems generalize many diseases, thus limiting the use of our results to propose prevention and control interventions for specific diseases. However, despite its limitations, this study analyzes the first national survey of the Peruvian sexual and gender minority population, including a large sample and reporting information on possible factors associated with chronic diseases, infectious diseases, and mental health problems. Furthermore, this study performs an interaction analysis including various sexual minority groups and offers a panorama of what is happening in low- and middle-income countries.

5. Conclusion

We found evidence that having a history of sex work is associated with chronic diseases, infectious diseases, and mental health problems in the sexual and gender minority population from Peru. Therefore, it is necessary to provide educational health interventions and establish greater access to health services to reduce the prevalence of diseases through appropriate diagnosis and treatment. In addition, it is recommended to continue carrying out studies in this population that associate new risk factors with specific diseases.

Data Availability

The data used to support the findings in this study are available at https://iinei.inei.gob.pe/microdatos/.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Supplementary Materials

Supplementary 1: causal diagram of sex work history and health problems in the sexual and gender minority population from Peru. Supplementary 2: general characteristics according to the reason for sex work in the population of sexual and gender minorities from Peru. (*Supplementary Materials*)

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