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Advancing Health Equity through Labor Inclusion: Evidence from Trans, Travesti and Non-Binary People in Brazil

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Abstract

Background

Health equity cannot be achieved without addressing the structural conditions that shape opportunities for social and economic participation. Among transgender, *travesti*, and non-binary (TTNB) populations, exclusion from protected labor markets represents a persistent form of structural disadvantage, yet its role in producing health inequities remains insufficiently investigated, particularly in middle-income countries. This study examined the social patterning of precarious occupational insertion among TTNB populations, considering labor precarity as one expression of the structural conditions that shape health equity.

Methods

This cross-sectional analytical study used data from the community-based MapTrans Project conducted in 2023 with 237 transgender, *travesti*, and non-binary individuals living in the Baixada Santista Metropolitan Region, São Paulo, Brazil. Precarious occupational insertion was defined as unemployment, informal labor, sex work, or unstable income-generating activities. Descriptive analyses and crude and adjusted logistic regression models were performed to examine associations between occupational precarity and sociodemographic characteristics, educational attainment, income, race/color, and perceived barriers to employment.

Results

Precarious occupational insertion was highly prevalent and concentrated among participants experiencing multiple dimensions of structural disadvantage, including low educational attainment, low income, barriers to employment, psychosocial distress, and experiences of violence. After adjustment, self-identified brown race/color was associated with higher odds of precarious occupational insertion (aOR = 2.54; 95% CI: 1.03–6.26), whereas trans men/transmasculine participants had lower odds compared with non-binary participants (aOR = 0.26; 95% CI: 0.09–0.81). An inverse association was also observed for the Indigenous/Yellow category, although this finding should be interpreted cautiously because of the very small number of participants in this subgroup.

Conclusions

Our findings indicate that precarious occupational insertion among TTNB populations should not be interpreted simply as an employment outcome but as an empirical manifestation of the structural conditions that shape health equity. By providing community-based evidence from a middle-income country, this study expands the international literature on structural labor inequalities affecting gender-

diverse populations and highlights equitable labor inclusion as an essential component of strategies aimed at reducing health inequities, placing health equity at the center of equitable development strategies.

Background

Achieving health equity requires moving beyond a sector-specific understanding of health toward a broader vision of equitable development. Development should be understood as a dynamic process through which all people have equitable opportunities to achieve well-being, supported by fair access to education, employment, income, healthcare, and social protection [1, 2]. Within this perspective, health inequities are not merely differences in health outcomes but avoidable and unjust consequences of structural social arrangements that systematically disadvantage populations through discrimination, unequal access to resources, and exclusion from decision-making processes [3, 4]. Advancing health equity therefore requires coordinated action across the social, economic, and institutional conditions that shape opportunities throughout the life course rather than focusing exclusively on healthcare services [1, 5].

As the international community discusses the post-2030 Sustainable Development Agenda, health equity has become increasingly recognized not only as an outcome of health systems but also as a prerequisite for equitable development [2]. Recent scholarship further emphasizes that reducing health inequities requires research capable of explaining how structural determinants organize unequal opportunities while informing multisectoral policies and implementation strategies aimed at advancing equity [6]. Likewise, equity-oriented governance frameworks argue that equitable outcomes do not emerge automatically from universal policies but depend on explicit institutional strategies that embed equity throughout policy design, implementation, and evaluation [7].

Employment is one of the principal structural conditions through which health inequities are produced and reproduced across the life course [1, 3]. Beyond generating income, participation in the formal labor market provides social protection, economic security, civic participation, and access to resources that influence health throughout the life course. Conversely, exclusion from stable and protected employment reinforces cumulative processes of material deprivation, discrimination, and social marginalization. From the perspective of equitable development, labor market inclusion should therefore be understood not simply as an economic objective but as a structural strategy for reducing health inequities and expanding opportunities for health and well-being [2]. Despite its central role, labor market precarity has received comparatively limited attention as one of the structural conditions shaping health equity, particularly among transgender, *travesti*, and non-binary populations living in low- and middle-income countries [8].

Transgender, *travesti* and non-binary (TTNB) populations are among those most affected by structural exclusion from labor markets. In many countries, discrimination based on gender identity limits educational trajectories, restricts access to formal employment, reduces lifetime earning potential, and

increases reliance on informal occupations that are economically unstable, socially exclusionary, and potentially dangerous [8, 9]. Rather than representing isolated experiences of interpersonal discrimination, these patterns reflect structural transphobia operating through institutions, educational systems, labor markets, and public policies. Recent public health scholarship similarly argues that transphobia should be understood not as a collection of isolated discriminatory events but as a systemic process embedded within social institutions that generates persistent health inequities across the life course [10].

International evidence consistently demonstrates that TTNB populations experience substantially higher rates of unemployment, informal employment, occupational discrimination, and income insecurity than cisgender populations [11, 12]. These conditions are associated with poorer mental health, reduced access to healthcare, housing instability, food insecurity, increased exposure to violence, and diminished opportunities for social participation [9, 13]. However, most available evidence originates from high-income countries, where labor markets, welfare systems, and legal protections differ substantially from those found in middle-income settings. Consequently, comparatively little attention has been devoted to understanding labor market exclusion itself as a structural mechanism producing health inequities within these contexts.

Brazil offers a particularly important setting for examining these processes. Although important legal and policy advances have expanded the recognition of transgender rights, TTNB people continue to experience persistent barriers to education, formal employment, income generation, and social protection [14]. These disadvantages are compounded by racial inequities, territorial inequalities, and institutional discrimination, creating overlapping processes of exclusion that shape opportunities throughout the life course [15]. Despite growing recognition that employment constitutes a key social determinant of health, relatively few community-based quantitative studies conducted in Latin America have examined labor market exclusion as a structural mechanism producing health inequities among gender-diverse populations, thereby limiting the evidence available to inform equity-oriented labor and health policies.

From a health equity perspective, precarious occupational insertion should therefore not be interpreted as an individual characteristic or simply the consequence of limited employability. Instead, it represents the cumulative expression of intersecting systems of structural inequality that distribute opportunities unequally according to gender identity, race, socioeconomic position, and institutional recognition. Shifting the analytical focus from supposedly “vulnerable groups” to the structural production of vulnerability enables a more comprehensive understanding of how health inequities are generated and sustained [5, 10].

Using data from the community-based MapTrans Project conducted in the Baixada Santista Metropolitan Region, São Paulo, Brazil, this study examines the social patterning of precarious occupational insertion among transgender, *travesti*, and non-binary people, considering labor precarity as one empirical expression of the structural conditions that shape health equity. Specifically, we

investigate the associations between sociodemographic characteristics, educational attainment, income, perceived barriers to employment, and precarious occupational insertion. By providing community-based evidence from an underrepresented middle-income setting, this study contributes to the international literature on health equity by demonstrating how precarious occupational trajectories are socially patterned among gender-diverse populations and highlighting equitable labor inclusion as an essential strategy for advancing health equity through equitable development.

Methods

Study Design and Epistemological Framework

This analytical cross-sectional study was grounded in Community-Based Participatory Research (CBPR) principles and interpreted through the frameworks of the Social Determinants of Health (SDH) and Intersectionality. Rather than conceptualizing labor market participation as an individual characteristic, the study examined precarious occupational insertion as a structural manifestation of systemic transphobia, racialization, and institutional exclusion.

Data were derived from the MapTrans Project ("Mapping the Transgender Population of the State of São Paulo: Metropolitan Region of Baixada Santista"), conducted between August and December 2023 in the nine municipalities of the Baixada Santista Metropolitan Region, Brazil.

Community Engagement and Peer-Led Sampling Strategy

Because TTNB populations are difficult to reach through conventional probabilistic sampling, recruitment was conducted using a peer-led community sampling strategy. Peer recruiters were selected based on their social legitimacy and established community networks across the study territory. Community participation informed all study phases, including instrument adaptation, recruitment, and interpretation of findings.

Data were collected through face-to-face or synchronous remote interviews using REDCap, predominantly conducted by trained transgender peer researchers in confidential community-based settings, including primary healthcare services, harm reduction centers, community organizations, and Centro POP facilities.

Population, Sample Size Dynamics, and Analytical Sub-sample

The theoretical target population comprised approximately 19,965 TTNB individuals living in the metropolitan region, estimated using the national prevalence of gender-diverse adults in Brazil (1.88%) reported by Spizzirri et al. [16]. The calculated minimum sample size was 377 participants, assuming a 5% margin of error and a design effect of 1.

Variable Definitions and Operationalization

Fieldwork yielded 237 eligible participants. Although structural violence, social marginalization, and institutional mistrust limited attainment of the theoretical sample size, this represents one of the largest community-based epidemiological datasets involving TTNB populations collected in a metropolitan region of Latin America outside state capitals.

For the present study, inferential analyses were restricted to participants who reported current labor market participation or active job seeking, consistent with the objective of examining factors associated with precarious occupational insertion. Participants with missing information on occupational variables or covariates included in the adjusted model were also excluded. Consequently, the analytical sample consisted of 160 participants, whereas descriptive analyses were conducted using all available observations.

Outcome Variable: Precarious Occupational Insertion

Occupational trajectories were originally collected through detailed open-ended items. Due to extreme category dispersion and high job informality, occupations were systematized using a structural classification framework.

Precarious Occupational Insertion was operationalized as a binary outcome comparing structural disadvantage against protected employment:

- Precarious Insertion (Code = 1): Unprotected labor arrangements characterized by extreme vulnerability, absence of social security, unstable income, or severe exclusion. This category aggregates: (a) sex work; (b) structural unemployment/active job seeking; (c) casual, unregistered, or unspecified informal occupations.
- Non-Precarious Insertion (Code = 0; Reference): Protected employment relations governed by formal labor legislation (CLT in Brazil), public sector employment, or registered, stable self-employment with social security contributions.

Structural Exposures and Covariates

Guided by an intersectional framework, independent variables spanned multidimensional markers of social stratification:

- Perceived Labor Market Barriers: Evaluated via structural access limitations and self-reported difficulty in obtaining employment (Categorized: *No* vs. *Yes*).
- Racialization: Self-reported race/skin color following the official IBGE classification (*White*, *Brown/Parda*, *Black/Preta*, *Indigenous/Yellow*).

- Gender Spectrum: Operationalized across disaggregated self-identifications (*Travesti/Trans Woman*, *Trans Man/Transmasculine*, *Non-binary*, *Other*).
- **Socioeconomic Position**: Educational attainment (Postgraduate, Higher Education, High School, and Elementary/Middle School) and monthly personal income categorized according to multiples of the Brazilian monthly minimum wage (BMW) in effect in 2023 (> 3 BMW, 1.5–3 BMW, 1–1.5 BMW, 0.5–1 BMW, and ≤ 0.5 BMW).
- **Psychosocial and Structural Markers**: Perceived mental health status, clinically diagnosed anxiety/depression, and lifetime exposure to sexual violence.

Statistical Analysis Framework

Descriptive analyses summarized the distribution of all variables using absolute and relative frequencies. Associations between explanatory variables and precarious occupational insertion were examined using crude logistic regression models. Variables considered theoretically relevant to structural health inequities and those associated in bivariate analyses were subsequently included in multivariable logistic regression models, with adjusted odds ratios (aOR) and 95% confidence intervals (95% CI) reported.

Multicollinearity was assessed using variance inflation factors (VIF), with all values remaining below 2.1. Statistical analyses were performed in Stata version 17. Because recruitment followed a non-probabilistic peer-referral strategy, findings are interpreted as internal associations within the study population rather than population-level estimates.

Ethical Considerations and Vulnerability Protections

The study complied with the Declaration of Helsinki and the Brazilian National Health Council regulations (CNS Resolutions 466/2012 and 510/2016 for Social Sciences and Humanities). The protocol was formally approved by the Research Ethics Committee of the Reference and Training Center for STD/AIDS (CEP Protocol N^{O}. 5.971.093; CAAE: 64010722.8.0000.5375).

Written or digital Informed Consent (TCLE) was obtained from all participants prior to data collection. Strict data anonymization protocols were applied, ensuring that sensitive territorial, occupational, and gender data could not be linked back to individual participants, protecting them from structural and interpersonal risks.

Results

Sample characterization

A total of 237 transgender, *travesti*, and non-binary participants were included in the study. Descriptive analyses were conducted using all available observations, whereas inferential analyses were based on an analytical sample of 160 participants.

A predominance of young and socially heterogeneous individuals was observed, with a diversity of gender identities and racial affiliations, coexisting with marked socioeconomic vulnerability, expressed by limited educational levels and unstable income patterns. A significant portion of the participants reported no personal income or earning the minimum wage, along with a high frequency of difficulties finding work, highlighting persistent structural barriers to insertion into the labor market (Table 1).

Table 1

Sociodemographic and occupational characteristics of the study participants, São Paulo, 2023.

Variable	Frequency (n)	Percentage (%)
Age Group		
18–24 years	86	36,3
25–29 years	69	29,1
30–39 years	51	21,5
40–59 years	29	12,3
≥ 60 years	2	0,8
Race/Color	121	51,1
White		
Brown	65	27,4
Black	42	17,7
Indigenous / Yellow	7	2,9
Don't know / No answer	2	0,8
Gender identity	100	42,2
Trans woman / transvestite		
Trans man / transmasculine	86	36,3
Non-binary	48	20,3
Other	3	1,3
Education		
Postgraduate Studies	14	5,9
Completed / incomplete higher education	85	35,8
Completed / incomplete high school	114	48,1
Completed / incomplete elementary and middle school	24	10,2
Income for the past month	24	10,1
> R$ 3.960		
R$ 2.641–3.960	21	8,9
R$ 1.321–2.640	40	16,9

Variable	Frequency (n)	Percentage (%)
Age Group		
R$ 661 – 1.320	52	21,9
≤ 660	22	9,3
No income	77	32,5
Don’t know	1	0,4
Difficulty finding a job		
Yes	156	65,8
No	73	30,8
Don't know / No answer	8	3,4

Precarious occupational insertion was of high magnitude in the studied population, characterized by concentration in informal labor arrangements, engagement in economic activities for survival, unemployment, and dependence on social transfers or unstable sources of income. In contrast, formal employment relationships protected by labor legislation constituted a minority trajectory, indicating structural exclusion from the regulated labor market and fragility in the socioeconomic integration of trans populations in the territory under analysis.

Bivariate analyses suggested an uneven distribution of precarious employment according to social markers. Patterns of greater vulnerability were more frequently observed among participants with lower educational levels and incomes, as well as those who reported barriers to accessing work. Indicators of psychological distress and a history of violence also tended to concentrate in precarious occupational trajectories, pointing to the coexistence of material deprivation, psychosocial suffering, and precarious occupational insertion. However, despite these differentiated distributions, most associations were not statistically significant when examined in isolation (Table 2).

Table 2

Factors associated with precarious employment, São Paulo, 2023.

Employment relationship				
	Total n (%)	**Not precarious n (%)**	**Precarious n (%)**	
Gender identity				**(p = 0,041)**
Non-binary people	34 (21,4)	11 (32,4)	23 (67,6)	
Trans men / transmasculine men	61 (38,4)	34 (55,7)	27 (44,3)	
Transvestites / trans women	64 (40,3)	24 (37,5)	40 (62,5)	
Age Group				(p = 0,582)
18–24 years	44 (27,5)	15 (34,1)	29 (65,9)	
25–29 years	46 (28,8)	22 (47,8)	24 (52,2)	
30–39 years	42 (26,3)	21 (50,0)	21 (50,0)	
40–59 years	23 (14,4)	9 (39,1)	14 (60,9)	
≥ 60 years	5 (3,1)	2 (40,0)	3 (60,0)	
Race/color				**(p = 0,030)**
White	75 (47,5)	37 (49,3)	38 (50,7)	
Brown	45 (28,5)	13 (28,9)	32 (71,1)	
Black	32 (20,3)	13 (40,6)	19 (59,4)	
Indigenous / Yellow	6 (3,8)	5 (83,3)	1 (16,7)	
Education				**(p = 0,035)**
Post-graduate Studies	13 (8,1)	9 (69,2)	4 (30,8)	
Completed / incomplete higher education	59 (36,9)	24 (40,7)	35 (59,3)	

Employment relationship				
	Total n (%)	**Not precarious n (%)**	**Precarious n (%)**	
Gender identity				**(p = 0,041)**
Completed / incomplete high school	71 (44,4)	33 (46,5)	38 (53,5)	
Completed / incomplete elementary and middle school	17 (10,6)	3 (17,6)	14 (82,4)	
Monthly Income				**(p = 0,096)**
> R$ 3.960	23 (14,6)	13 (56,5)	10 (43,5)	
R$ 2.641–3.960	21 (13,3)	12 (57,1)	9 (42,9)	
R$ 1.321–2.640	40 (25,3)	20 (50,0)	20 (50,0)	
R$ 661–1.320	52 (32,9)	18 (34,6)	34 (65,4)	
≤ R$ 660	22 (13,9)	6 (27,3)	16 (72,7)	
Difficulty finding a job				**(p = 0,078)**
No	64 (40,0)	33 (51,6)	31 (48,4)	
Yes	96 (60,0)	36 (37,5)	60 (62,5)	
Mental health assessment				**(p = 0,062)**
Good / Excellent	76 (48,1)	39 (51,3)	37 (48,7)	
Average / Bad / Very bad	82 (51,9)	30 (36,6)	52 (63,4)	
Anxiety diagnosis				(p = 0,426)
No	87 (54,4)	40 (46,0)	47 (54,0)	
Yes	73 (45,6)	29 (39,7)	44 (60,3)	

Employment relationship				
	Total n (%)	**Not precarious n (%)**	**Precarious n (%)**	
Gender identity				**(p = 0,041)**
Diagnosis of depression				(p = 0,998)
No	109 (68,1)	47 (43,1)	62 (56,9)	
Yes	51 (31,9)	22 (43,1)	29 (56,9)	
Sexual violence throughout the lifetime				(p = 0,530)
No	69 (43,4)	28 (40,6)	41 (59,4)	
Yes	90 (56,6)	41 (45,6)	49 (54,4)	

After adjustment, several associations observed in the unadjusted analyses were attenuated. Self-identified brown race/color remained associated with higher odds of precarious occupational insertion (aOR = 2.54; 95% CI: 1.03–6.26), whereas trans men/transmasculine participants had lower odds compared with non-binary participants (aOR = 0.26; 95% CI: 0.09–0.81). An inverse association was also observed for the Indigenous/Yellow category (aOR = 0.08; 95% CI: 0.01–0.94); however, this estimate was based on a very small subgroup (n = 6) and should therefore be interpreted cautiously. Associations involving income, education, perceived barriers to employment, and psychosocial indicators were attenuated after adjustment and their confidence intervals included the null value (Table 3).

Table 3
Univariate and multivariate analysis of the sociodemographic and health characteristics of population transgender.

Variable	Odds Ratio (95% CI)	Adj.Odds Ratio (95% CI)
Mental Health Assessment	Reference	Reference
Good / Excellent		
Poor / Fair / Very poor	1,83 (0,97–3,45)	1,63 (0,73–3,62)
Difficulty finding a job		
No	Reference	Reference
Yes	1,77 (0,93–3,37)	1,52 (0,67–3,43)
Monthly income		
> R$ 3.960	Reference	Reference
R$ 2.641–3.960	0,98 (0,30–3,22)	0,62 (0,16–2,44)
R$ 1.321–2.640	1,30 (0,46–3,65)	0,92 (0,27–3,21)
R$ 661–1.320	2,46 (0,90–6,70)	1,51 (0,43–5,29)
≤ R$ 660	3,47 (0,99–12,09)	2,11 (0,45–9,99)
Education		
Graduate Studies	Reference	Reference
Completed / incomplete higher education	3,28 (0,91–11,89)	2,32 (0,48–11,19)
Completed / incomplete high school	2,59 (0,73–9,20)	1,40 (0,27–7,27)
Completed / incomplete elementary and middle school	10,50 (1,89–58,36)	3,83 (0,46–31,77)
Race/color		
White	Reference	Reference
Brown	2,40 (1,09–5,27)	**2,54 (1,03–6,26)**
Black	1,42 (0,62–3,29)	1,43 (0,54–3,78)
Indigenous / Yellow	0,19 (0,02–1,75)	0,08 (0,01–0,94)
Gender identity		
Non-binary people	Reference	Reference
Trans men / transmasculine men	0,38 (0,16–0,91)	0,26 (0,09–0,81)

Variable	Odds Ratio (95% CI)	Adj.Odds Ratio (95% CI)
Transvestites / transgender women	0,80 (0,33–1,92)	0,56 (0,17–1,84)

Discussion

Interpretive synthesis

The findings indicate that precarious occupational insertion among transgender, *travesti*, and non-binary (TTNB) people in the Baixada Santista Metropolitan Region is highly prevalent and socially patterned, characterized by informal employment, unemployment, income instability, and limited access to protected employment. These conditions were concentrated along multiple dimensions of disadvantage, including lower educational attainment, income restriction, barriers to employment, psychosocial distress, and experiences of violence, suggesting that labor precarity is embedded within broader trajectories of social exclusion.

The attenuation of several associations after adjustment should not be interpreted as evidence that these dimensions are unimportant. Rather, it may reflect substantial overlap among income restriction, educational exclusion, racialized marginalization, gender identity, and psychosocial vulnerability, which operate through interconnected trajectories of social disadvantage. From an intersectional perspective, these dimensions are not expected to function as isolated predictors but as mutually constitutive components of broader processes of social stratification.

After adjustment, self-identified brown race/color remained associated with higher odds of precarious occupational insertion, while trans men/transmasculine participants had lower odds compared with non-binary participants. The persistence of these associations highlights the relevance of racialized and gendered positioning within the broader processes that organize unequal access to protected employment. Rather than representing isolated individual characteristics, race/color and gender identity operate within institutional and social arrangements that shape differential opportunities for labor market participation.

The inverse association observed for the Indigenous/Yellow category (aOR = 0.08; 95% CI: 0.01–0.94) should be interpreted with caution given the very small number of participants in this category (n = 6). The limited sample size precludes a robust interpretation of this finding as evidence of a protective association.

Taken together, these findings support the interpretation of precarious occupational insertion not as the consequence of individual employability or discrete social characteristics, but as an expression of intersecting systems of structural disadvantage. Labor precarity emerges as one pathway through which socioeconomic inequality, racialization, gender-based discrimination, and psychosocial vulnerability converge in everyday living conditions. From a health equity perspective, this shifts the analytical focus

from identifying supposedly vulnerable individuals to understanding the social and institutional processes that systematically produce unequal opportunities for employment, economic security, social participation, and health.

Health equity perspective

Taken together, our findings indicate that precarious occupational insertion among transgender, *travesti*, and non-binary (TTNB) people is not randomly distributed across the population but follows socially patterned trajectories of structural disadvantage. Although only a limited number of associations remained statistically significant after adjustment, the attenuation of associations involving income, educational attainment, and psychosocial indicators should not be interpreted as evidence of their irrelevance. Rather, these findings suggest substantial overlap among structural determinants, indicating that socioeconomic position, racialized inequalities, and perceived barriers to employment operate as interconnected dimensions of cumulative disadvantage rather than as isolated predictors.

Our findings therefore suggest that precarious occupational insertion among TTNB populations should not be interpreted as an individual employment outcome, but as an empirical manifestation of the structural conditions that shape health equity. Rather than reflecting individual qualifications or isolated labor market experiences, precarious occupational trajectories were socially patterned according to multiple dimensions of structural disadvantage. From this perspective, labor market precarity constitutes one of the mechanisms through which broader systems of social exclusion become embodied in everyday living conditions, influencing opportunities for economic security, social participation, and ultimately health and well-being.

In this regard, Brazil offers a particularly important context for understanding how structural inequalities in the labor market shape health equity among the TTNB population. Our findings corroborate recent national evidence demonstrating persistent disparities in employment and income. In 2023, only 25.0% of the population self-identifying as transgender in Brazil was formally employed, compared to 31.8% of the general population, while average formal income remained approximately 32% lower than that observed in the workforce [17]. In our study, income emerged as one of the key indicators through which these structural inequalities became evident, reinforcing the central role of economic exclusion in shaping unequal opportunities for health and well-being. These results corroborate earlier evidence that income distribution remains one of the most influential structural determinants of population health [3].

The persistence of racial inequalities alongside socioeconomic disadvantage reinforces that precarious occupational insertion among TTNB populations cannot be explained by a single dimension of social inequality. Instead, our findings suggest that educational attainment, income, perceived barriers to employment, and race operate as interconnected dimensions of structural disadvantage, shaping unequal opportunities for labor market participation. Rather than acting independently, these factors accumulate across the life course, limiting access to stable employment and reinforcing processes of social exclusion.

This interpretation is consistent with intersectionality-informed approaches to health equity, which argue that inequities emerge through the interaction of multiple systems of power rather than from isolated social identities or individual characteristics. In the context of TTNB populations, labor market precarity should therefore be understood as the cumulative expression of intersecting structural processes, including transphobia, racism, socioeconomic disadvantage, and institutional exclusion. Similar mechanisms have been described in previous studies demonstrating that employment inequalities among transgender populations are shaped by the combined effects of discrimination in education, barriers during hiring processes, restricted career opportunities, and unequal access to social protection, rather than by individual employability alone [8–10, 13].

Although these findings emerge from a Brazilian context, they are consistent with international evidence demonstrating that labor market exclusion represents a persistent and globally distributed phenomenon affecting transgender populations. Recent reports from the Organisation for Economic Co-operation and Development (OECD) describe systematic inequalities in employment, earnings, and career progression among LGBTQIA+ populations across multiple countries [11]. Similarly, the Williams Institute reported that more than four out of five employed transgender adults had experienced discrimination or harassment in the workplace during their lifetime, accompanied by substantially greater economic vulnerability than the general population [12]. Together, these findings reinforce that labor market precarity among TTNB populations reflects broader structural processes operating across diverse social, economic, and institutional contexts rather than isolated national circumstances.

The implications of these findings extend beyond employment policy and should be interpreted within broader strategies to advance health equity. Labor market participation represents far more than a source of income; it provides access to social protection, institutional recognition, economic security, and opportunities for full participation in society. Consequently, precarious occupational insertion may amplify multiple dimensions of disadvantage by increasing exposure to economic insecurity, discrimination, and social exclusion, thereby contributing to cumulative health inequities across the life course. In this context, evidence demonstrating the association between labor discrimination, low income, and multiple forms of violence among TTNB populations reinforces that occupational precarity is closely connected to broader processes of structural marginalization rather than to individual characteristics [17].

These findings are further supported by studies demonstrating that prolonged exposure to minority stress, institutional discrimination, and structural violence contributes to higher levels of depression, anxiety, and psychological distress among transgender populations [13, 18]. Violence, therefore, should not be interpreted as an isolated outcome but as one manifestation of the same structural processes that restrict educational opportunities, limit access to decent work, and constrain social participation. This interpretation is consistent with Brazilian evidence showing that transphobia is reproduced through multiple institutional settings, including schools, labor markets, public services, and policing practices, creating persistent cycles of social exclusion [10, 14, 19].

From a policy perspective, these findings reinforce recent international calls to place health equity at the center of development agendas beyond the health sector. As emphasized by the World Health Organization and recent debates surrounding the post-2030 Sustainable Development Goals, reducing health inequities requires coordinated action across education, labor, social protection, and justice systems rather than isolated healthcare interventions. Within this framework, equitable labor inclusion should be understood not only as an employment objective but also as a structural public policy capable of expanding opportunities for health, citizenship, and social participation among transgender, *travesti*, and non-binary populations.

Taken together, our findings indicate that precarious occupational insertion among transgender, *travesti*, and non-binary populations is socially patterned according to intersecting structural inequalities rather than individual characteristics. By demonstrating that labor market disadvantage is consistently associated with socioeconomic position, racial inequalities, and perceived barriers to employment, this study supports the interpretation of labor precarity as one manifestation of the structural conditions that shape health equity. These findings therefore directly contribute to the growing international debate on equitable development by highlighting labor inclusion as a fundamental component of strategies aimed at reducing health inequities.

Conclusion

This study demonstrates that precarious occupational insertion among transgender, *travesti*, and non-binary populations is not simply an employment outcome but an empirical expression of the structural conditions that shape health equity. Rather than reflecting individual qualifications or isolated labor market experiences, labor precarity was socially patterned according to intersecting dimensions of structural disadvantage, including socioeconomic position, racial inequalities, and perceived barriers to employment. These findings support the interpretation of labor market exclusion as one of the mechanisms through which broader systems of discrimination and social stratification generate unequal opportunities for health and well-being.

By providing community-based evidence from a middle-income country, this study expands the international literature on health equity by demonstrating how structural labor inequalities operate within the lives of transgender, *travesti*, and non-binary populations. Our findings suggest that promoting equitable labor inclusion should be understood not solely as an employment objective but as a structural strategy for reducing health inequities. Policies aimed at eliminating discrimination, expanding educational and occupational opportunities, strengthening social protection, and removing institutional barriers have the potential to generate benefits that extend beyond the labor market itself, contributing to more equitable conditions for health, citizenship, and social participation.

As countries seek to advance the post-2030 Sustainable Development Agenda, ensuring equitable labor participation for historically marginalized populations should be recognized as a fundamental component of inclusive development. Placing health equity at the center of equitable development

strategies is not only essential for improving health outcomes but also for building more just, resilient, and socially inclusive societies.

Abbreviations

CBPR
Community–Based Participatory Research
Centro POP
Specialized Reference Center for the Homeless Population (*Centro de Referência Especializado para População em Situação de Rua*)
CLT
Consolidation of Labor Laws (*Consolidação das Leis do Trabalho*)
CNS
National Health Council (*Conselho Nacional de Saúde*)
CRT
DST/AIDS–Reference and Training Center for STD/AIDS (*Centro de Referência e Treinamento em DST/AIDS*)
LGBTQIA+
Lesbian, gay, bisexual, transgender, queer/questioning, intersex, asexual, and other sexual and gender identities
MapTrans
MapTrans Project ("Mapping the Transgender Population of the State of São Paulo: Metropolitan Region of Baixada Santista")
OECD
Organisation for Economic Co–operation and Development
SDH
Social Determinants of Health
TCLE
Informed Consent Form (*Termo de Consentimento Livre e Esclarecido*)
TTNB
Transgender, travesti, and non–binary
VIF
Variance Inflation Factor

Declarations

Ethics approval and consent to participate

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments, or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and/or analyzed during the present study are not publicly available due to ongoing adjustments to our website, but are available from the corresponding author upon reasonable request.

Competing interests

The authors declare no conflicts of interest.

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Authors' contributions

BILB conceived and designed the study, coordinated the MapTrans Project, supervised data collection, contributed to the study methodology, interpreted the findings, and led the writing and critical revision of the manuscript. MLCM, LFZN, LVPE, GFC, ACOS contributed to the interpretation of the findings and critical revision of the manuscript. DGF contributed to data analysis, interpretation of the findings, and critical revision of the manuscript. CGL contributed to data analysis, manuscript writing and revision, and supervision. SL contributed to manuscript writing and revision and supervision. All authors read and approved the final manuscript.

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