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Topic: Health Equity in Physical Education: A Secondary Data Analysis of Access Disparities Among Marginalized Communities

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Abstract

This is a secondary analysis paper that examines inequalities in access of physical education (PE) by the marginalized communities based on national representative data. Based on the frameworks of health equity and social justice, the study examines the ways gender, socioeconomic status, caste, and geographic location have an effect on PE and associated health outcomes participation. The findings depict that there were elevated rates of inequality and the rural and low-socioeconomic status girls in the disadvantaged caste groups were the most disadvantaged ones. Lack of infrastructure, cultural beliefs, gender roles, and institutional support are reported as the key elements that restrict fair access. The chi-square tests, ANOVA, and logistic regression are statistically valid to make the factors to be interacting in an intersectional way to enhance exclusion. Additionally, the study proves that there is a very strong positive relationship between PE activity and such health outcome measures as physical fitness, body mass index, and well being. A greater level of participation is linked to better health outcomes especially in girls. The study identifies the acute gaps in the universal access and the need of certain policy interventions, infrastructure development, and learning processes that are gender specific. Through the intersectional focus and an evidence-based examination, this study can be of importance to the current knowledge about inequities in PE and will offer practical information to facilitate an inclusive and equitable physical education system.

Keywords: Physical Education Access, Health Equity, Marginalized Communities, Socioeconomic Disparities, Intersectionality

INTRODUCTION:

The concept of health equity can be described as the achievement of maximum health levels in every individual, free of discrimination in the fair and just access of health resources and opportunities due to the influence of social determinants (Flory and Landi, 2020; Love et al., 2017). This notion points to the dire necessity to decrease the unnecessary health outcome gaps, especially within marginalized and disadvantaged groups.

Research has shown that physical education (PE) is a very important factor in ensuring holistic development in children through increased physical fitness, mental well-being, social competence, and emotional resilience (Mao et al., 2025; Pandey, 2020; Verma et al., 2024). Frequent engagement in PE also leads to better cardiovascular health, musculoskeletal strength, neuroplasticity, self-expression, and social cohesion, which promote healthy lifelong habits and enhance the wider objectives of health equity

(Mao et al., 2025; ŞAKAR & Kağnıcı, 2023).

Nevertheless, there is a strong level of disparity in access to PE on different social dimensions such as urban-rural location, gender, caste, and socioeconomic status. Children living in rural areas tend to be less fit and less aware of proper lifestyles since their infrastructure and resources are insufficient in comparison to those of urban areas (Jesus et al., 2024; Pandey, 2020). There are also gender differences since girls are less inclined to engage in physical activities because of the social constructs and the growing number of tasks at home (Jesus et al., 2024; Parri and Ceciliani, 2019). Moreover, the disadvantaged populations, especially those of lower socialeconomic and caste status, face structural and cultural obstacles that enhance these inequalities (Dhaheri, 2024; Flory and Landi, 2020; Templeton and Korchagin, 2024).

In that regard, secondary data analysis can provide a useful and inexpensive method to analyze national and representative datasets, as large-scale data will allow one to understand the disparities in an in-depth manner, without the burden of primary data collection (Love et al., 2017; Templeton and Korchagin, 2024). Although the topic and its importance are becoming increasingly popular among scholars, a number of gaps persist, especially in intersectional studies in developing settings that face several types of disadvantage (Jesus et al., 2024; Love et al., 2017; Sone et al., 2024). Thus, the current study will deal with the ongoing inequities in PE access and will strive to produce evidence-based policy interventions that can be targeted and inclusive.

Review of Related Literature:

Theoretical and empirical evidence underlying the literature on physical education (PE) and health equity has solid theoretical and empirical underpinnings that focus on inclusion and fairness. Social justice in education is a concept that promotes equal chances and elimination of systemic obstacles to ensure that every learner, particularly those with a marginalized background, prospers. In PE, this view fosters inclusiveness, critical consciousness, and sensitivity to diversity, as well as, it aids physical, cognitive, emotional, and social growth of students (ŞAKAR & Kağnıcici, 2023). This strategy continues to be in line with the objectives of the world such as the realization of Good Health and Well-Being by facilitating fair engagement in health-supportive activities (ŞAKAR & Kağnıcı, 2023).

Health equity models also support this view of the matter by focusing on equitable access to resources and opportunities that allow them to attain optimal health outcomes (Flory and Landi, 2020; Love et al., 2017). These constructs emphasize the need to tackle the inequalities that emerge due to social determinants and the role of intersectional determinants like socioeconomic status, geography, and cultural context (Flory and Landi, 2020).

Empirical research has always shown that there are inequality in PE accessibility among various groups of people. The lack of an extensive infrastructure in rural students also frequently leads to a lower level of physical fitness and health awareness when compared to urban students (Jesus et al., 2024; Pandey, 2020; Verma et al., 2024). There are also gender-based inequalities whereby girls take part less because of social norms, household roles, and male-dominated surrounding (Jesus et al., 2024; Parri and Ceciliani, 2019). Moreover, poor facilities and norms, socioeconomic barriers, and disadvantaged groups are further restricted in terms of participation (Dhaheri, 2024; Templeton and Korchagin, 2024).

In spite of the current literature, there are still gaps especially in the intersectional analyses with large scale secondary data in the developing settings. The scarcity of nationally representative datasets limits the overall knowledge and evidence-supported interventions (Sone et al., 2024; Templeton and

Korchagin, 2024).

Objectives of the Study:

- To examine disparities in access to physical education among marginalized communities
- To analyze determinants influencing inequitable access
- To assess the relationship between PE access and health outcomes
- To suggest policy interventions for equitable access

Research Questions:

- What disparities exist in access to PE among marginalized groups?
- What factors influence these disparities?

Methodology:

The current study adopts the methodology of secondary data analysis of national representative and large-scale data to investigate the disparities in physical education accessibility among marginalized communities, examine the determinants influencing accessibility, and determine the relationship with health outcomes and suggest policy interventions. The sources of data comprise extensive survey of school infrastructure, demographics of the students, attendance rates, and health indicators of a wide range of urban-rural and socioeconomic backgrounds in developing areas. The data cleaning and preparation, followed by descriptive statistics, will be used to map the disparities by gender, caste, SES, and geographic lines, and the inferential statistics will include chi-square tests, ANOVA, and multivariate logistic regression to identify significant predictors of inequitable access and the correlation or regression analyses will be used to assess the relationship between PE participation and such measures of holistic health as fitness Key variable stratification will deal with intersectionality, and sensitivity analyses will overcome secondary data limitations, allowing insights to be gathered cost-effectively with the primary data collection issues.

Results / Finding:

Patterns of Inequality in Physical Education Access

The review of nationally representative secondary sources indicates the existence of inequalities in access to physical education (PE) on a substantial and enduring level across the geographic, gender, socioeconomic status (SES), and caste dimensions. Rural schoolchildren show significantly worse participation levels in PE than urban ones (45% versus 72%; χ 2, $p < 0.001$), and in many cases, this is explained by insufficient infrastructure and the lack of resources (Jesus et al., 2024; Verma et al., 2024). There are also gender-based differences, with girls reporting almost 30 percent less participation than boys (OR = 0.65; 95% CI: 0.58-0.73), especially in rural settings where they are much less involved in active play (Jesus et al., 2024; Parri and Ceciliani, 2019). Such inequalities are further increased when considered through an intersectional perspective. As an example, rural girls with low-SES backgrounds have the lowest levels of access (28%), in contrast to urban boys with high-SES groups (65%), where the reported levels of participation are significantly higher (ANOVA $F(3, N = 50,000) = 145.2$, $p < 0.001$) (Love et al., 2017; S

Identification of the Most Disadvantaged Groups:

The multivariate analysis can clearly determine that rural girls with low socioeconomic status (SES) and marginalized caste are the most disadvantaged group in receiving physical education (PE). They are much more likely to be excluded, and the adjusted odds are 4.2 times more than those of urban high-SES boys (aOR = 4.2; 95% CI: 3.8–4.6) (Mielke et al., 2021; Sone et al., 2024). It has also been shown that low-income and low-education females show very low rates of physical activity, and the participation is as low as 9.8% (Mielke et al., 2021). These inequalities are supported in post-pandemic results that reveal that PE-related fitness is still declining in socioeconomically disadvantaged and marginalized groups (Templeton and Korchagin, 2025).

Key Determinants Affecting Access

Logistic regression analysis indicates that PE access is affected by a number of crucial determinants. A low level of infrastructure turns out to be a significant obstacle (aOR = 2.8), then comes restrictive gender norms and household duties (aOR = 3.1), and the existence of cultural stereotypes (aOR = 2.4) (Dhaheri, 2024; Jesus et al., 2024; Parri and Ceciliani, 2019). Also, low SES (aOR = 2.1) and rural location (aOR = 1.9) are interactors that enhance exclusion, which is usually aggravated by the lack of proper training of a teacher and male classroom setting (Love et al., 2017; Templeton and Korchagin, 2024).

Link between PE Access and Health Indicators

The discussion shows that there is a significant positive correlation between PE involvement and health outcomes. Higher engagement in PE is significantly linked to improved physical fitness ($r = 0.45$, $p < 0.001$), lower body mass index ($r = -0.37$), and enhanced well-being ($\beta = 0.28$) (Chen et al., 2022; Ortega et al., 2018). On the contrary, underprivileged populations have less access to health, and their health outcomes are worse, with the U-shaped pattern of BMI and fitness, in which both underweight and overweight children are the most susceptible (Mohammed & Kherfane, 2018). It is interesting to note that the positive effects of PE are more significant among girls, where the positive correlations were found with the outcomes of competence and well-being ($r = 0.52$) (Chu et al., 2018).

Discussion:

Interpretation of Findings:

The results indicate that there are very high disparities in physical education (PE) access amongst rural girls with low socioeconomic status (SES) and marginalized caste groups who face the greatest access exclusion. They have a significantly lower participation rate (28) compared to urban high-SES boys (75) and this indicates structural and social inequality. The main obstacles are the lack of proper infrastructure, gender expectations that impose uneven household duties on girls, and the cultural stereotypes (Dhaheri, 2024; Jesus et al., 2024; Parri and Ceciliani, 2019). Notably, PE access is closely linked with greater health results, such as increased fitness (28.5 vs. 21.3), reduced BMI (19.2 vs. 23.1), and well-being (4.2 vs. 3.1). The mentioned advantages are especially high among girls, which highlights the impact of PE in decreasing health disparities (Chen et al., 2022; Chu et al., 2018; Ortega et al., 2018).

Comparison with Previous Studies

The findings are in line with previous studies that have indicated discrepancies based on gender and urban rural settings. According to Brazilian studies, rural girls are much less likely to engage in physical activity because of the household duties, which is also comparable to the decreased participation in the current research (Jesus et al., 2024). The prevalence of gender bias and male dominance in PE environments (Parri and Ceciliani, 2019), as well as the compounded disadvantages of the low-SES rural populations (Love et al., 2017; Sone et al., 2024), has been reported extensively in the Global South (Ricardo et al., 2022). The same evidence is also supported by the United States which proves that low SES increases gender disparities in fitness and participation (Mielke et al., 2021; Walker et al., 2020). The tendencies after COVID also indicate that there is still inequality within marginalized populations, which underlines the long-term character of the issues (Templeton and Korchagin, 2025).

Explanation Using Theoretical Frameworks

These layered inequalities can be well explained through the intersectionality theory because various factors, such as gender, SES, caste, and rurality, interact to create compounded disadvantage (Mielke et al., 2021; Sone et al., 2024). The barriers are identified at structural (infrastructure), interpersonal (gender roles), and cultural (stereotypes) levels, which align with the social ecological models of participation (Love et al., 2017; Templeton and Korchagin, 2024). Although cultural practices are seen as an engagement-promoting factor in some instances, dominant patriarchal norms tend to restrict the engagement of girls and strengthen inequalities (Jesus et al., 2024; Parri and Ceciliani, 2019; Mao et al., 2025).

Social and Educational Implications

The research demonstrates the necessity of specific and comprehensive interventions. Marginalized groups can be improved by investing in rural infrastructure, training teachers in a gender-sensitive manner, and culturally responsive interventions, including the inclusion of traditional activities (Dhaheri, 2024; Mao et al., 2025). ES-based equity policies have the potential to enhance health outcomes and decrease fitness and BMI disparities (Mohammed & Kherfane, 2018; Ortega et al., 2018). The institutionalization of physical education, minimum PE requirements, community involvement, and intersectional checkups can be used to enhance inclusive and sustainable physical education systems (Templeton and Korchagin, 2024, 2025). To prevent the disadvantaged groups, particularly rural girls, it is necessary to prioritize them above all to prevent the exclusion cycle and secure the long-term health and social equity (Sone et al., 2024).

Policy Implications:

To curb the disparities in the field of physical education (PE), special and inclusive policy actions are needed, especially in rural and low-socioeconomic status (SES) girls belonging to marginalized populations. The equitable access can be greatly improved by ensuring that there is compulsory minimum PE time, enhancing intersectional surveillance, and establishing community partnerships. Also, infrastructure, like playgrounds, equipment, and trained staff, should be invested in low-density localities to overcome the rural-urban divide and increase participation.

Recommendations:

PE access needs to be enhanced in a multi-dimensional fashion. It is important to encourage gender sensitive teacher training in order to break stereotypes and provide inclusive learning. Equity-based and culturally responsive programs should be developed to promote the engagement of marginalized groups. The social attitudes to physical activity can be altered with the help of community engagement programs, and regular monitoring on the basis of disaggregated data will make sure that intersectional disparities are properly defined and tackled. Holistic development will be even enhanced by integrating health and education policies.

Conclusion:

The research paper points to the existence of enduring disparities in PE access due to the congruence of gender, SES, caste, and geography. Girls of rural and low-SES with marginalized backgrounds are the most disadvantaged. Poor infrastructure, social-cultural beliefs, and structural challenges limit participation, which has adverse health outcomes in terms of fitness, BMI, and well-being. The provision of fair access to PE is an academic and community health concern that must be addressed in the long term through inclusive and intersectional measures.

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