

# EXPLORING THE EFFECT OF DIVERSITY AND ITS IMPACT ON LEARNING AMONG MEDICAL STUDENTS

Renu Yadav<sup>1</sup> and Subodh Kumar Yadav<sup>2</sup>

<sup>1</sup>Department of Physiology, <sup>2</sup>Department of Human Anatomy, Birat Medical College and Teaching Hospital, Biratnagar, Nepal

## ABSTRACT

As the world becomes increasingly diverse, it is essential for medical professionals to be adequately prepared. This project aims to explore awareness of diversity in the learning environment and perceptions of equity and inclusion in medical school. The methodology used included developing and implementing questionnaire items (23) related to diversity awareness and perception of inclusion in medical school using a 5-point Likert scale. Subsequently an awareness training workshop was conducted. Convenience and snowball sampling technique was used for total n= 247 (pre-workshop), n=210 (post-workshop) participants. A total of 247 (Female=147, Male=100) student's pre-workshop data followed by diversity workshop training conducted for 210 (Female=125, Male=85), post workshop data was collected. A comparison of pre- and post- workshop data revealed significant differences in some questionnaire items (1, 3, 4, 7, 8, 11, 13, 15, 22, and 23) that includes awareness of diversity policies, valuing and appreciating the differences and understanding the learning perspective. These findings suggest that existing diversity policies are insufficient on their own. Implementing comprehensive awareness programs is essential to fostering understanding, respect, and a sense of belonging, thereby enhancing effective learning in diverse populations.

## KEYWORDS

Diverse, awareness, equity, inclusion, diversity workshop

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## CORRESPONDING AUTHOR

Dr. Renu Yadav  
Associate Professor,  
Department of Physiology,  
Birat Medical College and Teaching Hospital,  
Biratnagar, Nepal  
Email: drresu2000@gmail.com  
Orcid No: <https://orcid.org/0000-0002-8126-6585>  
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## INTRODUCTION

Diversity refers to the wide range of distinctions among people, including characteristics like race, ethnicity, gender, age, sexual orientation, physical capabilities and additional factors.<sup>1</sup> This distinction greatly affects the learning environment of medical students who face challenges related to individual characteristics and geographic variation, among others. Studies examining curriculum perceptions found that students generally do not feel prepared to work in a (culturally) diverse society due to gaps in knowledge about differences, bias, resilience, and more related topics.<sup>2</sup>

Various studies have shown that diversity within a team improved a team's problem-solving ability compared to more homogeneous teams.<sup>3</sup> Students educated in a more diverse environment develop broader perspectives and are therefore better equipped to work comfortably and effectively in diverse environments.<sup>4</sup> Given the increasing diversity of society,<sup>5</sup> future medical practitioners must be prepared to meet the needs of this diverse patient population.<sup>6</sup> Studies reported lack of diversity in education which focus on diversity, health disparities and health equity a need to upgrade the medical education system.<sup>7,8</sup> From a learner's perspective, there is evidence that training for diversity and inclusion improve learning outcomes such as active thinking, empathy, intellectual engagement and motivation.<sup>9</sup> However, little is known regarding its effect among learners in medical schools.

If diversity, equity and inclusion (DEI) are not addressed at the institutional level and lack of policies among medical school programs, the barriers that exist for underrepresented populations will remain insurmountable. Therefore, this project attempts to explore the perspectives of medical students towards diversity as well as their experiences of inclusion and exclusion within a diverse learning environment. Providing diversity awareness training workshop, the aim was to foster diversity-sensitivity and to prepare well-equipped professionals with strong learning attitudes, critical thinking skills and cultural competence while also addressing racial disparities among students.

## MATERIALS AND METHODS

This is an explorative questionnaire-based study. The study employed a quantitative approach to explore the awareness and perceptions of students regarding diversity, equity and

inclusion (DEI), as well as their perspectives on learning within a diverse environment. Participants included students from various academic programs, such as the Bachelor of Science in Nursing (BSN), Pre-Medicine, and Doctor of Medicine (MD) studying in All Saints University School of Medicine and American University of St. Vincent, Caribbean. The study was approved by Institutional Review Board of All Saints University School of Medicine (Ref.: ASU/IRB/2024/0228) and meets all the criteria of ethical standard.

A combination of convenience, purposive, and snowball sampling techniques was used to recruit the participants. All participants who voluntarily provided written informed consent prior to participation were enrolled in the study. An orientation session was conducted to inform participants about the study purpose, emphasize confidentiality, and encourage honest sharing of personal perspectives and choices.

The framework of the project included the development and implementation of close-ended research questionnaires (23 items) using a 5-point Likert scale and yes/no questions. The questionnaires included the items were related to demographic characteristics; age, gender, religion, ethnicity, race as well as the items addressing participants' perceptions and awareness of diversity, equity, inclusion; its impact on learning; and their behavior, attitude, and sense of belonging in a diverse learning environment. Participants were categorized into the focus groups based on demographic variables such as gender, race, ethnicity, and religion, allowing for a more nuanced exploration of perspectives within diverse subgroups. The structured questionnaire items for students were administered both online (Google form) and onsite, depending on feasibility.

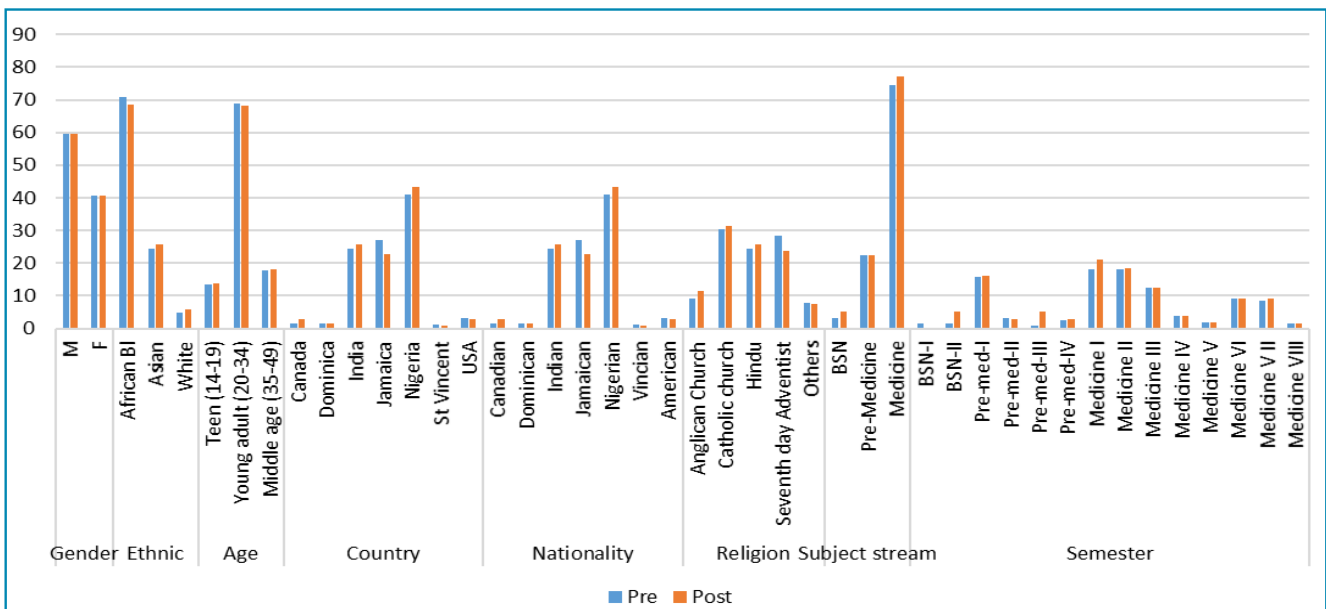
A pilot study was conducted to assess internal consistency using Cronbach's alpha (students items= 0.74). Subsequently, the questionnaires were administered to medical students on a larger scale. Pre-workshop data was collected. Descriptive frequency analysis was done. As a follow-up intervention, a diversity awareness workshop was conducted for students over two consecutive sessions. Post-workshop re-administration of same questionnaire and descriptive frequency analysis was performed. Pre and post workshop data were collected and compared using the Mann-Whitney U test, and mean differences were documented to evaluate the impact of the training sessions.

## RESULTS

Table 1: Comparison between mean responses of questionnaire items pre and post workshop training

Questionnaire items	Pre-workshop n1=247		Post-workshop n2=210		Sig. (2-tailed) (P value)
	Mean	SEM	Mean	SEM	
<b>Awareness</b>					
1. My school has policies on diversity, equity and inclusion.	4.18	0.024	4.69	0.032	<b>0.001*</b>
2. The school has sufficient programs and resources to foster the success of a diverse student body.	4.43	0.032	4.44	0.034	0.916
<b>Perception</b>					
3. School leaders and staff are supportive (financially/emotionally) equally of everyone when challenges arise in a diverse environment.	2.36	0.031	2.86	0.054	<b>0.001*</b>
4. Students work better in a diverse environment.	3.59	0.032	4.26	0.045	<b>0.001*</b>
5. I am being valued for my overall academic growth in my medical school.	4.01	0.039	3.93	0.046	0.207
6. I am treated respectfully from management and policy makers.	3.99	0.043	3.95	0.046	0.573
7. I feel that I belong among my friends, seniors, juniors and teachers.	4.19	0.025	4.30	0.032	<b>0.003*</b>
8. I feel comfortable in my performance when I am with others in the learning environment.	3.20	0.026	3.62	0.046	<b>0.001*</b>
9. I have opportunities similar to those of my peers.	3.20	0.026	3.21	0.030	0.722
10. The institution places enough emphasis on issues of diversity, equity, and inclusion.	3.19	0.025	3.27	0.044	0.379
11. I believe I have enough positive influences on my academic growth.	3.43	0.032	3.58	0.044	<b>0.018*</b>
12. I do not have to put more effort than my peers to be valued equally at this institution.	3.13	0.063	3.14	0.069	0.879
13. I appreciate the learning opportunity in diverse population provided by our school.	2.74	0.047	2.96	0.054	<b>0.003*</b>
14. I believe that diversity has a positive impact on equity and inclusion in my school.	3.61	0.031	3.69	0.032	0.098
15. I observed all my colleagues are treated equally and included in all activities.	3.80	0.026	4.06	0.040	<b>0.001*</b>
16. I have experienced incidence of discrimination in my school.	4.21	0.026	4.21	0.029	1.000
17. I am treated fairly when there are challenges in the classroom.	3.21	0.047	3.15	0.051	0.396
18. At my school, I am never ignored due to my ethnicity, race, or gender.	2.81	0.046	2.73	0.052	0.383
19. I experience effective communication among teachers and students in my school.	4.39	0.031	4.38	0.035	0.930
20. My overall performance/personality has been improved by the diverse learning environment.	4.19	0.025	4.27	0.031	0.051
21. Are there mentoring or sponsorship programs available that support individuals from underrepresented groups? Yes/No	1.02	0.010	1.03	0.012	0.776
22. Have you received training on unconscious bias or diversity and inclusion? Yes/No	2.00	0.000	1.00	0.000	<b>0.001*</b>
23. Do you think diversity has impacts on equity and inclusion? Yes/No	1.37	0.031	1.00	0.000	<b>0.001*</b>

Mann Whitney U test, P&lt;0.05 is considered significant



**Fig. 1:** Descriptive analysis of demographic variables of the participants for pre-workshop and post workshop training

Descriptive analysis of demographic variables in terms of age, gender, ethnicity, nationality, religion including subject stream and semester for 247 (Female=147, Male=100) students who were enrolled in the study. Pre-workshop and post workshop data for percentage distribution was collected. Post workshop data was collected after conducting diversity workshop training for 210 (Female=125, Male=85) students who consistently attended the workshop and involved in survey questionnaire similar as it was conducted for pre-workshop participants. The bar diagram for the descriptive analysis was displayed above in Fig. 1.

Table 1 shows the comparative analysis of pre-training and post-training responses using Mann-Whitney U test for questionnaire items administered. The mean responses were identified significantly different for questionnaires items 1, 3, 4, 7, 8, 11, 13, 15, 22, and 23.

## DISCUSSION

The findings revealed significant insights into the perceptions of students regarding the teaching and learning environment in a diverse medical school environment. While diversity policies are in place, students perceive that real progress toward inclusion happens when individuals are both aware of and trained to work effectively with diverse populations. The workshop training findings highlight that implementation of awareness programs and personal engagement are key for success and more impactful than policy alone. It suggests a cultural shift toward valuing practical diversity

competence over simply relying on institutional statements.

Lack of diversity in the content of the medical curriculum in the areas of patient-physician communication (e.g. communicating with diverse patients in terms of gender, class and culture), developing medical knowledge and skills (e.g. diagnosing diverse patients, disease prevalence in diverse patients), and reflection on students' and health care professionals' own awareness and biases as observed by Muntinga *et al.*<sup>8</sup> Various research reported perceived gaps for students in the medical curriculum related to diversity issues.<sup>2,10,11</sup> Medical students have often voiced concerns about feeling unprepared in key areas such as diversity awareness, bias mitigation and resilience.<sup>12,13</sup> The value of self-reflection on ethno-racial diversity within both personal and professional networks as an effective strategy for addressing unconscious biases was emphasized by Louie *et al.*<sup>13</sup> A study by Prince *et al.*<sup>14</sup> validated the barriers faced by Black and Minority Ethnic (BME) graduate-entry medical students, significantly impacting their educational experiences and outcomes. Third-year medical students of UK medical school participated in a diversity-focused teaching session and found the experience to be a valuable aspect of their professional development. Students particularly appreciated the safe and open learning environment, which fostered honest discussions about personal beliefs and values related to sensitive topics.<sup>15</sup>

However, the results also brought to light certain challenges. Despite institutional efforts, a gap remains between policy implementation and actual experience. Many felt diversity

efforts lack practical relevance and some were reluctant to participate due to sensitive identities. To address this, orientation session was conducted assuring confidentiality focusing on real-world applications and interactive learning. These initiatives received positive feedback and served as a step toward translating policy into practice.

Looking forward, the project plans to integrate diversity training into core programming, ensuring that all students and teachers have access to these resources. Additionally, regular feedback collection will guide ongoing adjustments and corroborate that initiatives remain responsive to students' needs and experiences.

The present study concludes that students are aware of diversity policies and their perceptions of inclusion in diverse environments are limited. There is also minimal understanding

of diversity competence, its practical relevance, and real-world application. However, the workshop training resulted in a significant increase in awareness and improved perceptions regarding effective learning in diverse environments.

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