

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_56_19

The impact of outreach programs on academics development, personal development and civic responsibilities of dental students in Bhubaneswar city

Vinay Suresan, Avinash Jnaneswar, S. P. Swati, Kunal Jha, Bala Subramanya Goutham, Gunjan Kumar

Abstract:

INTRODUCTION: Inequalities persists in distribution, accessibility, and utilization of oral health services between urban and rural population. One approach to lessen this inequality is by incorporating rural outreach programs in the academic curriculum of health-care professionals.

OBJECTIVES: The objective of the study was to evaluate the effectiveness of outreach programs on academic development, personal development, and civic responsibilities of dental students and also to assess the changes in the domain scores within and between genders postintervention.

METHODOLOGY: The study population consisted of 100 dental students. The study methodology followed a before and after without control informal experimental study designs. At baseline, the participants were administered pretested structured questionnaire developed by D. Diaz Gallegos. Intervention involved posting participants in various rural outreach activities and academic field visits in various public health installations. A postintervention questionnaire developed by Anu F. Shinnamon *et al.* was administered to assess the change from the baseline. The change in domain scores was assessed using paired and unpaired *t*-test appropriately. $P \leq 0.05$ was considered as statistically significant.

RESULTS: The baseline scores of academic, personal, and civic domains were 6.05 ± 2.44 , 8.04 ± 2.84 , and 6.36 ± 2.23 which increased to 6.52 ± 2.10 , 13.56 ± 3.44 , and 8.55 ± 2.71 postintervention, respectively ($P \leq 0.05$). When comparing within genders, there was increase from the baseline, and this change in the scores postintervention was statistically significant ($P = 0.001$). The mean scores of all three domains between genders were statistically insignificant.

CONCLUSION: The outreach programs developed and enhanced the subject's academic skills, leadership qualities, self-confidence, communication skills, managerial skills, and responsibilities toward the rural community.

Keywords:

Academic, community dentistry, dental outreach, dental students, program evaluation, social responsibility

Introduction

According to the United Nations in 2016, the population of India stood at 1,326,801,576 making it the second most populated country in the world and is projected to become the

world's most populous country by 2022, surpassing the population of China.^[1] This population shows a large disparity in its distribution wherein 72.18% live in rural, and 27.82% live in urban areas.^[2] On similar grounds literacy, occupation, standard of living, and oral health-care

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Suresan V, Jnaneswar A, Swati SP, Jha K, Goutham BS, Kumar G. The impact of outreach programs on academics development, personal development and civic responsibilities of dental students in Bhubaneswar city. *J Edu Health Promot* 2019;8:188.

Department of Public Health Dentistry, Kalinga Institute of Dental Science, Patia, Bhubaneswar, Odisha, India

Address for correspondence:

Dr. S. P. Swati, Department of Public Health Dentistry, Kalinga Institute of Dental Sciences, KIIT University, Patia, Bhubaneswar - 750 124, Odisha, India. E-mail: sp.swati91@gmail.com

Received: 04-02-2019

Accepted: 28-05-2019

services also show a large disparity between urban and rural populations.^[3]

Owing to this disparity in health-care services, the rural population shows higher mortality rates, decreased life expectancy, greater prevalence of morbidity, and poorer self-reported health status. The medical care in rural India tends to be very basic or unavailable.^[4] Hence, it is said that oral health care of rural India follows the inverse care law, which states that “those with the greatest need for health care have the greatest difficulty in accessing it and are least likely to have their health needs met.”^[5]

This inverse care law also holds good for the oral health-care scenario in India. Although globally, there have been major improvements in the oral health-care sector, with remarkable advances in the prevention and management of oral diseases. Inequalities persist between developing and developed countries similarly in urban and rural populations. These inequalities exist in the distribution, accessibility, and utilization of oral health-care services. Reducing these disparities requires resource allocation in social and public health policy, leading to the provision of effective oral health care, improving professional and individual oral health behavior.^[6]

Various barriers prevent us from eliminating these disparities in rural communities such as workforce shortages, logistical difficulties, social, cultural, and psychological barriers making the availability and utilization of the health-care facilities difficult.^[7] One such massive barrier from the supply side would be the motivation of health-care professionals to work in rural communities irrespective of the service location, limited availability of workforce and resources. One approach to lessen this inequality is by incorporating rural outreach programs in the academic curriculum of oral health-care professionals making them more socially responsible.^[8]

An outreach program is a complete entanglement between the community and the oral healthcare institute or organizations. Outreach programs not only benefits the community but also the oral health-care professional. Outreach activities develop learning and applying knowledge to studies, community services, a sense of responsibility toward the unreached communities, advancing both oral health-care professionals and the community; reflection and feedback on the experience to improve and sustain the process; and a partnership between communities.^[9]

The subject of public health dentistry in the undergraduate curriculum provides a platform for the oral health-care professionals to partner with the communities through the outreach programs. Such activities develop not only

the clinical or academic skills of dental students but also build one’s personal skills and civic responsibilities toward serving the rural community. Hence, this study was undertaken with an aim to evaluate the effect of outreach programs on academic development, personal development, and civic responsibilities of dental students. The objective of the study was to assess the changes in the domain scores within and between genders postintervention.

Methodology

The study was approved by the Institutional Ethics Committee bearing the reference number KIMS/KIIT/IEC/15/2017. This study was conducted in Kalinga Institute of Dental Sciences, of Kalinga Institute of Industrial Technology University, Bhubaneswar city, Odisha. A total of 100 final year dental students formed the study population. An informed consent was signed by the participants before participating in the study. A universal sampling technique was applied. This study followed a before and after without control informal experimental study design [Figure 1].

Baseline assessment

The baseline assessment was carried out using a pretested questionnaire designed by D. Diaz Gallegos *et al.*^[10] This questionnaire assessed the effect of outreach programs under the three broad domains which were: The academic development domain, personal development domain, and the civic responsibility domain by questions categorized with a similar intent. This questionnaire consisted of 22 closed-ended questions with its responses based on four-point Likert scale (strongly agree, agree, disagree, and strongly disagree).

Intervention

The participants were divided into eight groups. Each batch of participants was posted in any of these rural outreach programs such as peripheral satellite centers, oral outreach treatment camps, and oral health education programs for the underserved communities such as the geriatric homes/orphanages and academic field visits to various public health installations supplementing their theoretical classroom learning. The various activities assigned to the participants during the outreach programs and their impacts on each of the domains are elaborated as follows.

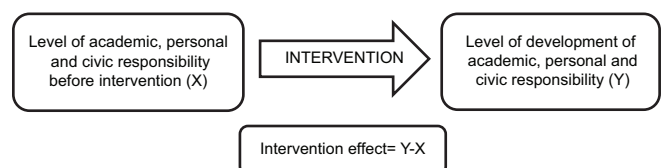


Figure 1: Before and after without control informal experimental study design

Academic development domain

The theoretical academic knowledge was reinforced when participants not only carried out independent screening procedures for oral diseases, comprehensive history taking, and treatment planning but also conducted various treatment procedures such as ultrasonic scaling, placement of interim and permanent restoration and tooth extractions feasible in an outreach setting under the supervision of a faculty member. Academic field visits were also conducted at different public health installations such as the sewage treatment plant, water treatment plant, milk processing plants, and public health institutes to understand their purpose and functioning supplementing their classroom learning.

Personal development domain

The outreach programs provided a platform to develop the personal skills of the participants. The location of these outreaches centers was close to large rural population base, with easy access to local infrastructures. This enabled the participants to develop their leadership, organizational, communicational, and managerial skills by working together as a team with a wider appreciation of dental services and increase in their self-confidence.

Civic responsibility domain

The outreach program provides opportunities to build a partnership between the institution and the community thus strengthening the social contract between the profession and the society. Working in outreach settings develop the cultural competencies when interacting and communicating with the individuals of the community, appreciation of their oral health issues, and public education efforts toward reducing oral health disparities in these underserved communities.

Postintervention assessment

Postintervention, a pretested questionnaire designed by Shinnamon *et al.*,^[11] was administered. This questionnaire was used as it records the perspective of the outreach program, the participants view on the service, their choice of career and outlook on working in a diverse community. This questionnaire consisted of 24 closed-ended questions used to assess their experience working in a group and treating patients, change in their attitude toward the community involvement and how much these programs improvised their leadership quality and managerial skills.

All participants signed an informed consent after explaining the nature and purpose of the study. The identity of the participants was concealed, and they were free to withdraw at any given point during the study. The participants who attended at least one outreach program were included.

Statistical analysis

The responses for every question in the questionnaire were coded based on the four-point Likert scale. The coding for the responses of positive questions was scored as follows: +2 (strongly agree), +1 (agree), -1 (disagree), and -2 (strongly disagree). Reverse coding was followed for questions which were negatively framed. The total scores of a particular domain were presented as mean \pm standard deviation (SD), and results of categorical measurements were presented as numbers and percentages.

The change in domain scores from baseline to postintervention was analyzed using paired *t*-test. Paired *t*-test was used to compare within genders and unpaired *t*-test to compare between genders. The collected data were imported to the Statistical Package for the Social Sciences (SPSS) 23.01 program. The change in domain scores was assessed using paired and unpaired *t*-test appropriately. $P \leq 0.05$ was considered as statistically significant.

Results

Sociodemographic variables

The study sample comprised of 100 participants of which 90 participants participated in the study (response rate: 90%). Six students could not participate in the study as their academic session started late as compared to the present study subjects and rest of them were not available at the time of data collection. Among the study population, 15 (17%) were male and 75 (83%) were female. The mean age of the study population was 22 years, and majority ($n = 42$, 47%) of the participants were of 21 years [Table 1].

Baseline domain scores

In response to the questions under the academic development domain; 47 (52%) participants strongly agreed that they learned more when the course contains hands-on or experiential components and a mere 25 (28%) participants disagreed to the statement stating, "courses in dental college make me think about real-life

Table 1: Sociodemographic distribution among the study population

Variables	n (%)
Gender	
Males	15 (17)
Females	75 (83)
Age (years)	
20	25 (28)
21	42 (47)
22	15 (20)
23	2 (2)
24	3 (3)

in new ways.” Likewise, the responses to the personal development domain; 40 (44%) participants strongly agreed that they like it when they get to make decisions in their work and on the contrary 69 (77%) participants disagreed on the statement "When I am put in charge of a project, I wonder whether I can succeed at it. Finally, the responses to the civic responsibility domain; 35 (39%) participants strongly agreed that being involved in a program to improve their community is important and on the contrary, 34 (38%) participants agreed that it is not necessary to volunteer their time to help people in need [Table 2].

Post-intervention domain scores

The responses to the academic development domain reported that nearly half ($n = 48.53\%$) of the participants strongly agreed that outreach programs should be implemented more often. Alike, 28 (31%) participants

strongly disagreed to the statement stating, “I would have learned if more time was spent in the classroom instead of in the community.” Proceeding to the personal development domain; 47 (52%) participants strongly agreed that the outreach programs helped them to become more aware of the community needs and 46 (51%) participants agreed that the outreach programs made the health professionals aware of their roles in other disciplines apart from their own. Finally, the responses of civic responsibility domain; 53 (59%) participants strongly agreed that they have a responsibility to serve the community and 51 (57%) participants strongly disagreed that they probably will not volunteer or continue community involvement after this course [Table 3].

Comparison of the domain scores

Comparison of the postintervention mean scores of all

Table 2: Responses to the baseline assessment of all the three domains

Domains	Questions	Responses n(%)			
		Strongly disagree	Disagree	Agree	Strongly agree
Academic development domain	I learn more when courses contain hands-on or experiential component.	0	2 (2.22)	41 (45.4)	47 (52.2)
	Courses in dental college make me think about real-life in new ways	0	25 (27.7)	52 (57.7)	13 (14.4)
	I have definite career plans	0	24 (26.6)	42 (46.6)	24 (26.6)
Personal development domain	I like it when I get to make decisions in my work.	0	2 (2.2)	48 (53.3)	40 (44.4)
	When I am put in charge of a project, I wonder whether I can succeed at it.	12 (13.3)	69 (76.6)	9 (1)	0
Civic responsibility domain	Being involved in a program to improve my community is important	0	1 (1.1)	54 (60)	35 (38.8)
	It is not necessary to volunteer my time to help people in need	17 (18.8)	38 (42.2)	34 (37.7)	1 (1.1)

Table 3: Responses to the post-test questionnaire of all three domains

Domains	Questions	Options of the questions n (%)			
		Strongly disagree	Disagree	Agree	Strongly agree
Academic development domain	Outreach programs should be implemented more at my school	0	2 (2.2)	40 (44.4)	48 (53.3)
	I would have learned if more time was spent in the classroom	28 (31.1)	58 (64.4)	4 (4.44)	0
	Outreach program helped me to better understand the study material	0	8 (8.88)	50 (55.5)	32 (35.5)
Personal development domain	Outreach program experience was not directly linked to building clinical skills.	11 (12.2)	46 (51)	33 (36.6)	0
	Outreach programs helped me to become more aware of the needs in the community.	0	4 (4.4)	39 (43)	47 (52.2)
	Outreach programs made me more aware of the roles of health professionals in other disciplines	0	12 (13.3)	46 (51.1)	32 (35.3)
	Participating in the community programs helped me enhance my leadership skills	0	10 (11.1)	57 (63)	23 (25.5)
Civic responsibility domain	Doing work in the community helped me to define my personal strengths and weaknesses.	0	8 (8.8)	43 (47)	39 (43.3)
	I have a responsibility to serve the community.	0	1 (1.1)	36 (40)	53 (58.8)
	I probably won't volunteer or continue community Involvement after this course.	51 (56.6)	27 (30)	11 (12.2)	1 (1.1)
	Community participation showed me how I can become more involved in my community.	0	5 (5.5)	48 (53.3)	37 (41.1)
	I have a responsibility to serve the community.	0	1 (1.1)	36 (40)	53 (58.8)
I can make a difference in the community.	0	5 (5.5)	49 (54.4)	36 (40)	

the three domains from the baseline is as follows: the academic development domain reported a baseline score of 6.05 (SD ± 2.44) which increased to 6.52 (SD ± 2.10) postintervention. Similarly, the personal development domain reported a baseline score of 8.04 (SD ± 2.84), which increased to 13.56 (SD ± 3.44) postintervention. Finally, the civic responsibility domain reported a baseline score was 6.36 (SD ± 2.23), which increased to 8.55 (SD ± 2.71) postintervention. This change in the mean scores of all the three domains was highly statistically significant ($P = 0.001$) [Figure 2 and Table 4].

Comparison of domain scores within gender

Males

At baseline, the scores of academic development domain were 5.47 (SD ± 2.3), which increased to 7.07 (SD ± 2.6) with a mean difference of 1.6. Similarly, in the personal development domain, the baseline scores were noted to be 7.13 (SD ± 3.3) which increased to 14.8 (SD ± 3.5) with a mean difference of 7.67 finally, the baseline scores of civic responsibility domain increased from 5.00 (SD ± 2.1) to 9.40 (SD ± 2.6) with a mean difference of 4.4. This increase in the scores of all the three domains was highly statistically significant ($P = 0.00$).

Females

At baseline, the scores of the academic development domain were 6.17 (SD ± 2.463), which increased to 6.41 (SD ± 1.98) postintervention with a mean difference of 0.24. Similarly, the baseline scores of the personal development domain increased from 8.23 (SD ± 2.724) to 13.31 (SD ± 3.381) postintervention, respectively, with a mean difference of 5.08, and finally, the baseline scores for the civic responsibility domain increased

from 6.64 (SD ± 2.16) to 8.39 (SD ± 2.7) postintervention, respectively, with a mean difference of 1.75. This increase in the mean scores all the three domains were highly statistically significant ($P = 0.001$).

Comparison of domain scores between genders

The postintervention scores of academic development domain between males and females were 7.06 (SD ± 2.65) and 6.41 (SD ± 1.98), respectively, with a mean difference of 0.66. This difference was statistically insignificant ($P = 0.27$). The personal development domain recorded a score of 14.86 (SD ± 3.56) in males and 13.30 (SD ± 3.38) in females with a mean difference of 1.56. This difference was statistically insignificant ($P = 0.10$). In concurrence with the other two domains, the civic responsibility domain recorded a score of 9.40 (SD ± 2.6) in males and 8.38 (SD ± 2.70) in females with a mean difference of 1.01. This difference was statistically insignificant ($P = 1.18$).

Discussion

The three main goals of an outreach program are to improve learning, promoting civic engagement, and strengthening communities through addressing their societal needs. An outreach program creates a partnership between the communities and the educational institutions. Such programs build on each other's strengths and develop their roles as change agents for improving health professions knowledge, civic responsibility, and the overall health of communities.^[12] In the same contexts, the General Dental Council report includes a recommendation that student teaching and learning should be increased by extending the clinical environment into any primary care setting approved by the dental school for the purpose of undergraduate education.^[13] Outreach teaching is now established within the curricula of most United Kingdom dental schools with various approaches in different schools. Locating such rural communities with increased levels of dental disease provides students with an enhanced learning environment to develop their skills in a primary dental care setting.^[13] Hence, the present study was conducted to evaluate the impact of an outreach program on academic development, personal development, and civic responsibility of dental students.

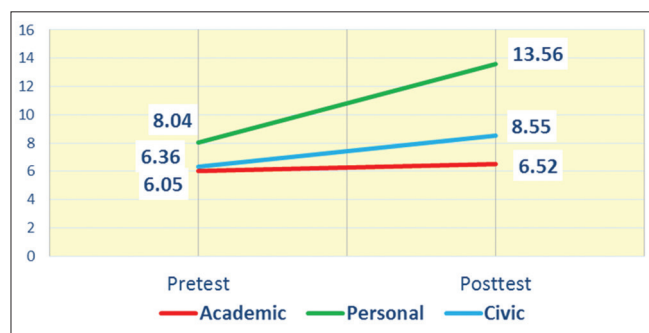


Figure 2: Change in the scores from baseline to postintervention of all three domains

Table 4: Comparison of pretest posttest mean scores of all three domains

Domains	Pretest	Posttest	Paired difference	t	P
Academic	6.05±2.44	6.52±2.10	0.47±0.34	28.067	0.00*
Personal	8.04±2.84	13.56±3.44	5.52±0.6	32.16	0.00*
Civic	6.36±2.23	8.55±2.71	2.19±0.48	31.40	0.001*

≠t-test, *Highly statistical significant

understand the material from their lectures and readings, 47% of the participants had definite career plans to implement community service in the future, 51% of the participants disagreed that outreach program experience was not directly linked to building clinical skills. These results were similar to the previous studies where 93%^[9] and 61%^[12] of the participants agreed that participating in the outreach activities helped them to better understand theory in their lectures. J E. DeCastro *et al.*,^[14] reported that students who had trained within an outreach facility graduated with higher examination board scores (94%) than those who had trained in a more traditional dental school environment (88%). A study done by Lynch *et al.*,^[13] have reported that students showed enthusiasm for training in an outreach environment. Yet another study done Lynch *et al.*,^[15] noted an improved performance among outreach-trained students recording patient histories and undertaking clinical examinations, with an increased appreciation of the impact of external social factors and family commitments on planned treatments.^[15]

Students reported their enthusiasm for training in an outreach program with a sense of growing confidence in their abilities and development of clinical practice. The academic field visits also contributed in the enhancement of their theoretical knowledge. Many studies stated that “the opportunity to apply learned theories in a new setting is popular, and can enhance the students learning opportunity.”^[14,16,17]

Personal development domain

With the increase in activity, there is an inevitable increase in breadth of experience. The activities which improves identity of an individual, develop potential, facilitates employability, enhances quality of life and contributes to the realization of aspirations is termed as personal development. The personal development is a lifelong process to acquire their skills and qualities, consider their aims in life, and set goals to realize and maximize their potential.^[18]

In the current study, 52% of the participants believed that participating in the community outreach program helped them to enhance their leadership skills. Similarly, 47% of the participants reported that community work defined their personal strengths and weaknesses and finally 51% of the participants agreed that outreach program made them more aware of the roles of health professionals in other disciplines besides their own. Concurrent results were reported in similar studies where 91%^[9] and 90%^[12] of the participants in two similar studies reported that they were comfortable working with people different from their profession. Similarly, 96%^[9] and 83%^[12] of the participants reported that community work helped them to define their personal strengths and weaknesses. About 88%^[9] and 69%^[12] of the participants believed that

participating in the community helped them to enhance their leadership skills.

The participants recognized the value of a multidisciplinary approach to holistic health care, and they felt comfortable working with health-care workers from other disciplines.^[19] The participants reported that this experience helped them define their personal strengths and weaknesses. This was due to working with supervisors who gave them more freedom, allowed them to make decisions on their own and were not as rigid as faculty members in the dental school environment. Students also realized teaching and learning within an outreach context is not a neatly structured, prepackaged activity, time scheduled activity that students are used to in dental school. Working in the outreach setup had increased the participants’ self-confidence by engaging themselves solely in managing their assigned duties. As a result, positive effects were observed on the students learning experience, appreciation for the need of team-work, development of managerial and communication skills.^[20]

Civic responsibility domains

It is well documented that dental students often enter dental training with traits of idealism, which includes compassion, humanitarianism, and desire to work with the underserved, yet these traits decline by the time, they progress through years of training.^[21]

In the current study, 97% of them believed that the outreach experience had made them aware of their roles in the community and 99% of the participants agreed that they have a responsibility to serve the community. Similar results were reported where 94%^[9] and 86%^[12] of the participants agreed that the outreach experience had made them aware of their roles in the community. Concurrently, 85%^[9] and 86%^[12] of the participants agreed that they have a responsibility to serve the community. In the present study, 61% of the participants disagreed to the statement stating, “it is not necessary to volunteer my time to help people in need.” Similar findings were recorded in a study done by Mofidi *et al.*,^[22] on dental students where they found an increase of 20% from the baseline in the quality of community services and 26% increase in the participants wanting to make a difference in the community. Another study done by Fitch N.,^[23] reported 96% of the participants became more aware of the needs of communities. Similarly a study done by Coe *et al.*,^[24] reported that 63% more students participated in the community services and developed the need for it and Nowaiser *et al.*,^[25] reported 80% of the respondents agreed that the dental community field experience made them aware of their roles, responsibilities toward the community and population needs.

The study participants received a close insight into the needs of the community during these outreach programs. Participation in the public life of a community in an informed, committed, and constructive manner with a focus on the common good develops ones' civic responsibility. Outreach activities can be a way for students to connect or reconnect with their communities, build relationships, think critically, negotiate, and to deal with real people with real challenges.

The impact of outreach programs on domain scores within gender

The mean scores of all the three domains increased from the baseline to post-intervention in males and females, and the difference was statistically significant ($P = 0.001$).

The aim of these programs was to expose students to the conditions in the communities by working away from their comfortable academic environment. Reflecting on their involvement helps them to understand the course content, the discipline, its relation to social needs, and their civic responsibility. These were the few reasons for the increase in domain scores postintervention.

The impact of outreach programs on domain scores between gender

The change in the results of all the three domains between gender was statistically insignificant. Almost three-quarters 82% of the participants were females, which reflects the current gender breakdown of dental students which is concurrent to the study done by Bhayat and Mahrous,^[9] where females were (72%) more in number compared to males. Similarly, in a study done by Smith *et al.*,^[26] showed 59% of participants in the study were female.

The outcomes of the outreach activities on female dentists are influenced by the conflict of trying to balance their professional careers with the competing responsibilities of marriage, homemaking, and childrearing.^[27] Women often anticipate career obstacles in connection with parenthood and abstain from a prestigious career. There is evidence that women work fewer hours per week and take career breaks. However, this is only one measure of devotion to one's career, given that quality and quantity of time are two separate facets of commitment.

Despite all the advantages, there are few limitations of this study that are worth mentioning. First, the small sample size did not allow us to perform multiple comparisons. This is of particular importance at a time when dental education is subjected to many pressures, and it identifies an area within which further development is encouraged to help dental school programs to evolve and meet the challenges of our present time. Second, every student did

not get the opportunity to participate in all the dental outreach programs, and the third, limitation of our study was unequal gender distribution.

One strategy for reducing the variation in student experience would be to provide students with multiple outreach placements and differently structured outreach programs which would have a different impact on students' attitude. Future programs can examine how different outreach programs/community-based dental education programs impact the dental students' attitude and may allow for the development of a gold standard or "best practice" that would maximize students learning outcomes.

Conclusion

Outreach programs are beneficial not only by providing the students an academic foundation but also to develop their self-confidence, leadership qualities, and their responsibilities toward the community. The outreach activities hence proved to have an impact on academic development, personal development, and civic responsibility of the participants. The students delivered relevant and meaningful care that related academic content to the real world. This strengthened their sense of responsibility toward their studies and had a positive impact on their attitudes regarding care for underserved communities. Overwhelming, students reported their enthusiasm for this form of learning environment, preferring it to traditional dental school environments.

Such outreach experiences were effective as an adjunct to traditional dental school-based training in improving students' confidence in providing treatment. More of such outreach programs should be encouraged so that students not only become knowledgeable in the clinical field but also develop features such as community awareness, community involvement, commitment to service, career development, self-awareness, leadership qualities, awareness of determinants of health, and understanding of course content.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. World Population Prospects: The 2017 Revision". United Nations Department of Economic and Social Affairs, Population Division. Available from: <https://esa.un.org/unpd/wpp/DataQuery/>. [Last accessed on 2017 May 19].
2. Rural Urban Population Distribution. Available from: http://censusindia.gov.in/2011-prov-results/paper2/data_files/india/

- Rural_Urban_2011.pdf. [Last accessed on 2017 May 22].
3. Das D, Pathak M. The growing rural-urban disparity in India: Some issues. *Int J Adv Res Technol* 2012;1:145-51.
 4. Hartley D. Rural health disparities, population health, and rural culture. *Am J Public Health* 2004;94:1675-8.
 5. Hart JT. The inverse care law. *Lancet* 1971;1:405-12.
 6. Pramod Y, Bakshish K, Ruchi S, Sumedha S. Oral health disparities: Review. *IOSR J Dent Med Sci* 2014;13:69-72.
 7. Jacobs B, Ir P, Bigdeli M, Annear PL, Van Damme W. Addressing access barriers to health services: An analytical framework for selecting appropriate interventions in low-income Asian countries. *Health Policy Plan* 2012;27:288-300.
 8. Dagli R, Singh A. Dental outreach program - how effective it is in reaching out to the community. *J Int Oral Health* 2015;7:i-ii.
 9. Bhayat A, Mahrous MS. Impact of outreach activities at the college of dentistry, Taliban University. *J Taibah Univ Med Sci* 2012;7:19-22.
 10. Diaz Gallegos D, Furco A and Yamada H. The Higher Education Service-Learning Surveys. Learning from each other, serving together. *J Int Christ Community Teach Educ* 1999;1:92-99. Available from: <https://ictejournal.org/issues/v1i1/v1i1-powell/>. [Last accessed on 2017 Jun 24].
 11. Shinnamon AF, Gelmon SB, Holland BA. Methods and Strategies for Assessing Service Learning in the Health Profession; 1999. Available from: <https://digitalcommons.unomaha.edu/cgi/viewcontent.cgi?article=1060&context=slceeval>. [Last accessed on 2017 Jun 27].
 12. Bhayat A, Vergotine G, Yengopal V, Rudolph MJ. The impact of service-learning on two groups of South African dental students. *J Dent Educ* 2011;75:1482-8.
 13. Lynch CD, Ash PJ, Chadwick BL, Hannigan A. Effect of community-based clinical teaching programs on student confidence: A view from the United Kingdom. *J Dent Educ* 2010;74:510-6.
 14. DeCastro JE, Bolger D, Feldman CA. Clinical competence of graduates of community-based and traditional curricula. *J Dent Educ* 2005;69:1324-31.
 15. Lynch CD, Ash PJ, Chadwick BL. Current trends in community-based clinical teaching programs in U.K. and Ireland dental schools. *J Dent Educ* 2013;77:604-11.
 16. Woronuk JI, Pinchbeck YJ, Walter MH. University of Alberta dental students' outreach clinical experience: An evaluation of the program. *J Can Dent Assoc* 2004;70:233-6.
 17. Hunter ML, Oliver R, Lewis R. The effect of a community dental service outreach programme on the confidence of undergraduate students to treat children: A pilot study. *Eur J Dent Educ* 2007;11:10-3.
 18. Personal Development – UK College of Personal Development; 2005. Available from: <https://ukcpd.net/personal-development/>. [Last accessed on 2018 Nov 02].
 19. Major N, McQuistan MR, Qian F. Changes in dental students' attitudes about treating underserved populations: A longitudinal study. *J Dent Educ* 2016;80:517-25.
 20. Jacobson JJ, Inglehart MR, Newlin S, Gould K, Bagramain RA. Caring in our communities – Service learning and senior dental students. *J Dent Educ* 2000;64:209.
 21. Lynch CD, Ash PJ, Chadwick BL, Hannigan A. Evaluation of a U.K. community-based clinical teaching/outreach program by former dental students two and five years after graduation. *J Dent Educ* 2010;74:1146-52.
 22. Mofidi M, Strauss R, Pitner LL, Sandler ES. Dental students' reflections on their community-based experiences: The use of critical incidents. *J Dent Educ* 2003;67:515-23.
 23. Fitch P. Cultural competence and dental hygiene care delivery: Integrating cultural care into the dental hygiene process of care. *J Dent Hyg* 2004;78:11-21.
 24. Coe JM, Best AM, Warren JJ, McQuistan MR, Kolker JL, Isringhausen KT. Service-learning's impact on dental students' attitude towards community service. *Eur J Dent Educ* 2015;19:131-9.
 25. Nowaiser AA, Tharwat M, Alsharif M, Musalli M, Meligy OE. The impact of community service on the attitude and perception of dental interns in king Abdulaziz University. *J Dent Oral Health* 2015;1:1.
 26. Smith M, Lennon MA, Brook AH, Robinson PG. A randomized controlled trial of outreach placement's effect on dental students' clinical confidence. *J Dent Educ* 2006;70:566-70.
 27. Pallavi SK, Rajkumar GC. Professional practice among woman dentist. *J Int Soc Prev Community Dent* 2011;1:14-9.