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**Research interest:** Orthodontics and Dental Education

### Introduction

Adequate time and effective training facilities are essential for undergraduate dental students participating in pre-clinical dental practice to ensure them providing safe treatment for patients in the future. The study aimed to explore the current status of pre-clinical dental training in China in relation to the curriculum setting and students' feedback of pre-clinical training in different dental schools and thus provide information for further standardize curricula.

### Materials and method

An online questionnaire was distributed electronically to undergraduates in 44 Chinese dental schools of different levels according to China Discipline Ranking (CDR). The questionnaire collected information in relation to the training hour and student to facility ratio of four main dental courses (cariology and endodontics, periodontology, prosthodontics and oral surgery), as well as the application and effect of virtual reality (VR) simulator in pre-clinical dental practice in different schools. Students' feedback was also collected.

#### Demographic descriptors of questionnaire respondents

	Sex		Year of study		Length of schooling		
	Female	Male	DDS5	DDS4	8-year programme	7-year programme	5-year programme
Number	415	150	294	271	43	6	516
Percentage	73.45%	26.55%	52.04%	47.96%	7.61%	1.06%	91.33%

A total of 565 valid questionnaires were recruited from 44 dental schools. Ultimately, there were 200 questionnaires came from 11 schools in group 1 (A and A+ level school), 208 questionnaires came from 13 schools in group 2 and 157 questionnaires from 20 schools in group 3 (B-and C-level school). The personal information of the respondents is listed in Table 1.

#### Students' feedback about the pre-clinical training courses they received

Groups	No. and percentage of total responders								
	Level of sufficiency			Level of efficiency			Level of satisfaction		
	Group one <sup>a</sup>	Group two <sup>b</sup>	Group three <sup>b</sup>	Group one <sup>a</sup>	Group two <sup>b</sup>	Group three <sup>b</sup>	Group one <sup>a</sup>	Group two <sup>b</sup>	Group three <sup>b</sup>
1	4 (2.00)	13 (6.25)	11 (7.01)	2 (1.00)	1 (0.48)	3 (1.91)	3 (1.50)	6 (2.88)	6 (3.82)
2	3 (1.50)	25 (12.02)	22 (14.01)	3 (1.50)	5 (2.40)	6 (3.82)	4 (2.00)	18 (8.65)	8 (5.10)
3	30 (15.00)	59 (28.37)	56 (35.67)	28 (14.00)	69 (33.10)	46 (29.30)	24 (12.00)	75 (36.00)	66 (42.00)
4	89 (44.50)	62 (29.81)	44 (28.03)	74 (37.00)	67 (32.20)	65 (41.40)	90 (45.00)	59 (28.30)	50 (31.80)
5	74 (37.00)	49 (23.56)	24 (15.29)	93 (46.50)	66 (31.70)	37 (23.50)	79 (39.50)	50 (24.00)	27 (17.20)

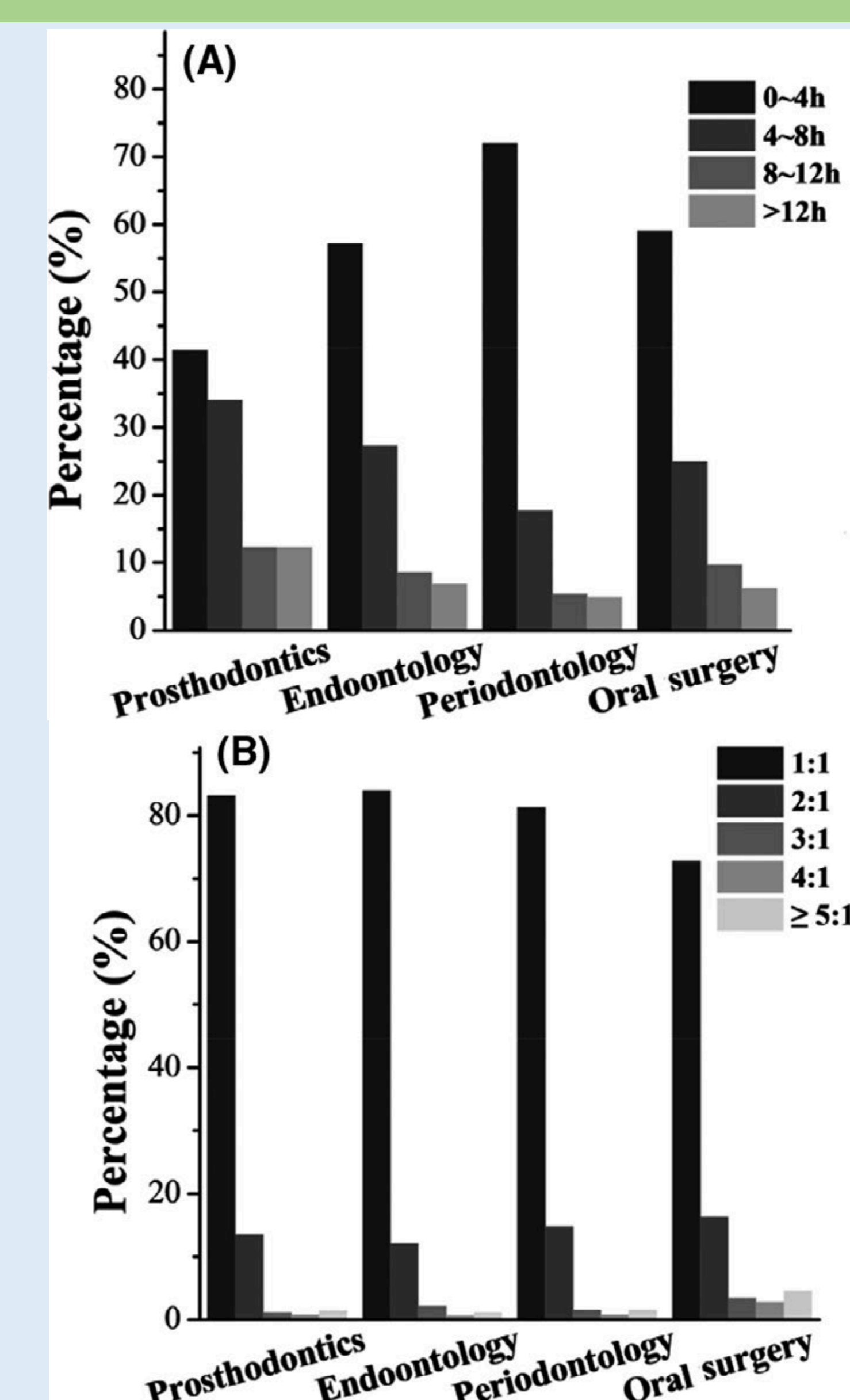
As shown in Table 2, students in Group 1 showed a higher percentage of better feedback towards the course experience in the level of equipment sufficiency, degree of satisfaction and level of training efficiency, whilst students in Group 3 were the lowest. The difference between Group 1 and the other two groups was statistically significant ( $p < 0.05$ ) as for the feedback in 3 aspects with the general pre-clinical courses, whilst no statistically significant difference was found between Group 2 and Group 3.

#### The application and effect of virtual reality simulator in pre-clinical training

Groups	No. and percentage of total responders								
	Level of efficiency			Level of satisfaction			Level of availability		
	Group one <sup>a</sup>	Group two <sup>a</sup>	Group three <sup>a</sup>	Group one <sup>a</sup>	Group two <sup>b</sup>	Group three <sup>b</sup>	Group one <sup>a</sup>	Group two <sup>b</sup>	Group three <sup>b</sup>
1	0 (0.00)	1 (1.14)	1 (1.56)	2 (1.36)	2 (2.27)	2 (3.13)	5 (3.40)	5 (5.68)	2 (3.13)
2	5 (3.40)	5 (5.68)	7 (10.94)	10 (6.80)	8 (9.09)	8 (12.50)	9 (6.12)	13 (14.77)	11 (17.19)
3	36 (24.49)	29 (32.95)	19 (29.69)	30 (20.41)	33 (37.50)	24 (37.50)	45 (30.61)	33 (37.50)	25 (39.06)
4	58 (39.46)	33 (37.50)	23 (35.94)	61 (41.50)	26 (29.55)	20 (31.25)	48 (32.65)	22 (25.00)	18 (28.13)
5	48 (32.65)	20 (22.73)	14 (21.88)	44 (29.93)	19 (21.59)	10 (15.63)	40 (27.21)	15 (17.05)	8 (12.50)

As shown in Table 3, twenty-seven of 44 responded dental schools (61%) claimed that they have introduced virtual reality simulator to assist the pre-clinical training, and the Group 1 (72.73%) showed a highest percentage of use, whilst Group 2 (53.33%) showed the lowest. Seventy-one per cent of the respondents in Group 1 are very satisfied with the introduction of virtual reality simulator in the pre-clinical training curriculum, followed by Group 2 (51.14%), and Group 3 (46.88%) was the lowest. As for level of training efficiency and availability about virtual reality, similar trend can also be found.

#### The training hour and student to facility ratio



As shown in Figure a, more than 40% of the students claimed that they spent less than 4 hours per week on the pre-clinical training in each main course, with periodontology the most frequently reported course (71.99% of the respondents) and prosthodontics the least frequently reported course (41.39%).

As shown in Figure b. More than 95% of the students claimed that they had access to the training facilities on their own in prosthodontics, cariology and endodontics and periodontology course, whilst the percentage of the respondents to the ratio for oral surgery course that more than 2:1 was found increased to 10.78%.

### Conclusion

Pre-clinical dental training in China remained imperfect in insufficient training time, training facility and students did not have access to standard pre-clinical training and quality assurance. VR technique has potential values in pre-clinical dental practice in China.