Knowledge and perception about dental implants among undergraduate dental students

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INTRODUCTION: Awareness about dental implants is increasing among dental patients, which demands a higher level of competence for dental students. So, the objective of this study was to assess the knowledge and perception of undergraduate dental students about dental implants.

MATERIALS AND METHODS: This cross-sectional questionnaire-based survey was conducted after taking ethical clearance and approval from the Institutional Review Committee of B.P. Koirala Institute of Health Sciences and informed consent from each dental college of Nepal. The sample included all those students who were present at the time of survey. Data collection were carried out during the academic schedules of the colleges, supervised, and monitored by the investigators themselves. Collected data were coded, entered in Microsoft excel 2013 and descriptive analysis was carried out.

RESULTS: A majority of the total (54.6%) and 59.2% of 5th year respondents perceived to be moderately well-informed about dental implants. The main advantage of dental implants was thought to be longevity by 53.1% of total and 48.4% of 5th year students; only 27.6% of the total and 42.2% of 5th year students said the main advantage of dental implants is they are more conservative than other tooth-replacement modalities. Highest percentage of the total respondents (31.9%) said most important factor for implant success to be implant type and material, whereas 59.8% of 5th year students said case selection. Those who felt dental implants require additional oral hygiene maintenance and care by the patient and dentist were 58.4% of total and 75.1% of 5th year students. Over two-thirds (67.5%) of total thought that economic feasibility will limit use of dental implants in Nepal. The difficulty encountered to place implants was perceived to be average by 56.8% of total and 58.1% of 5th year. There were differences in the perception and knowledge at different academic levels, but not as expected.

CONCLUSIONS: It could not be concluded that knowledge about dental implants increased with increase in academic level. Even at the late-clinical year a majority of students gave unsatisfactory responses.
Knowledge and perception about dental implants among undergraduate dental students of Nepal. There were 11 dental colleges with students at all academic levels. Enquiry was made about the number of students in different academic years of each college and the total number of students was thus calculated. The study population was all undergraduate dental students of Nepal. The sample included all those students who were present at the time of survey and excluded those who were absent. Data were collected through a pre-used questionnaire taken from previous study. Minor modifications relevant to the Nepalese population was made in the questionnaire after a pilot study. Data collection were carried out during term-time supervised and monitored by the investigators themselves. Collected data were coded, entered in Microsoft excel 2013 and descriptive analysis carried out.

RESULTS
The total number of students was 2400. The number of students present (number of questionnaires distributed) was around 1810, of which 1700 responded completely. Thus, the true response rate was 93.9%. Some aspects of demographic variables like age, sex, academic levels, and some other aspects of the survey have been published previously. Distribution of students according to sex, age, and response rate have been shown in the tables below (Tables 1–3). Responses to the questions at each academic level have been presented in Tables 4, 5.

A majority of the total students perceived themselves to be moderately well informed about dental implants (54.6%). A majority thought the main advantage of dental implants as compared to other tooth-replacement modalities is longevity (53.1%), only 27.6% said more conservative than other tooth-replacement modalities. A majority (58.4%) felt that dental implants require additional oral hygiene maintenance and care by the patient and dentist than natural teeth. 56.8% perceived the difficulty encountered to place implants as compared to other dental procedures to be average. Over two thirds (67.5%) thought that economic feasibility will limit use of dental implants in Nepal. There were differences in the perception and knowledge at different academic levels, but not as expected (Tables 4, 5).

DISCUSSION
This study shows that there was a predominance of females and higher number of students at 5<sup>th</sup> year and 4<sup>th</sup> year present than at initial years (out of total students at that year). Differences were seen in the responses of students at different academic levels but, not as expected. It was expected to get a higher number of most appropriate evidence-based answers from the students at higher academic years.

A majority of all students and 48.4% of 5<sup>th</sup> year said longevity is the main advantage of dental implants. Of the total students, 25.2% and 24.6% of the 5<sup>th</sup> year said implants last a life-time. Literature shows that the main advantage of dental implants as compared to other tooth-replacement modalities is they are more conservative as there is no need of preparing natural teeth as in conventional partial dentures. Duration of longitudinal studies on survival of implants in the literature is upto 20 years. So, the expected answer for the longevity of dental implants was 10–20 years. Patients should not be told that a dental implant will last for a life-time. Such belief will lead to unrealistic expectations.

Similarly, evidence shows that the most important factor for implant success is case selection, but the highest percentage of the total students (31.9%) said ‘implant type and material,’ and 40.2% of students at 5<sup>th</sup> year gave other answers than case selection. To the question about the cost of procuring a dental implant from an implant company and the initial set-up cost required to incorporate implant surgery into practice, a majority was not gained by any response. The highest percentage of the total respondents (35.1%) said they do not know the cost of procuring a dental implant. Such responses show their poor clinical exposure related to dental implants and a need to expose them to dental implant cases.

A majority of the total students and 72.4% of 5<sup>th</sup> year said they do not think dental implants are an acceptable solution for missing teeth in the Nepalese scenario because economic feasibility will limit their usage. A systematic review of literature has shown general public concern about the high cost of dental implant therapy, but dental students should be taught about the long-term cost of other treatment modalities as compared to implants so that they can advise patients about implant therapy whenever appropriate.

In a similar study done to assess the knowledge of dental interns of Nepal 58.6% said the main advantage of dental implants as compared to other tooth-replacement modalities is they are more conservative and 51.07% said case selection to be the most important factor for implant success. This suggests that undergraduate dental students in Nepal acquire much of their basic
knowledge about dental implants during their internship program. They have perceived the need and shown a positive attitude towards gaining more information about dental implant procedures through various sources. An all-India survey carried out to gauge the knowledge and perception of undergraduate students towards dental implants also concluded that there is a need for revision of undergraduate curriculum. A survey of American dental schools conducted to determine the curricular structure, teaching philosophies, and materials used in undergraduate implant dentistry courses showed that in 70% of the dental schools this course was offered in the third year of the undergraduate curriculum and for 75% of the schools, the duration of the course ranged from 3 to 6 months. In 78% of the schools, a laboratory course was offered in conjunction with the implant course and the majority of schools (88%) allowed undergraduate students to restore implant cases clinically; single-tooth implant restoration being the most popular type of implant restoration for 78% of the schools.

Another survey of European dental schools conducted to determine the curricular structure, teaching philosophies, and materials used in undergraduate implant dentistry courses found that undergraduate implant dentistry educational programs varied from school to school, yet a large percentage of schools agreed on certain topics, including the importance of including implant education in undergraduate dental programs. The First European Workshop on Implant Dentistry University Education held in Prague on 19–22 June 2008 released consensus document recommending that implant dentistry should be an integral part of the undergraduate curriculum.

The Australian Consensus Workshop on Implant Dentistry University Education, Gold Coast, 4–6 February 2010 also released consensus document recommending key competencies (knowledge, skills, attitudes and values) in the field of implant dentistry, necessary for graduating general practitioners in Australia. Not only developed countries but also developing countries need to follow clear recommendations and guidelines for implementation of implant dentistry in undergraduate curriculum. Though many obstacles like inadequate curriculum time, lack of financial resources, lack of qualified faculty are there making the job really challenging in developing countries. It is necessary to come-up with solutions or alternatives to those obstacles as soon as possible.

### CONCLUSIONS
Knowledge and perception about dental implants among undergraduate dental students differed at different academic years, but not as expected. Knowledge about dental implants was expected to increase with increase in undergraduate training but this was not observed. Even at the late-clinical year a majority of students gave unsatisfactory answers. Thus, there is a need for curriculum review, evaluation of teaching materials...
Table 5. Knowledge and perception about dental implants among undergraduate students from 1st year to 5th year

| Questions                                                                 | N (%) | 2nd year | 3rd year | 4th year | 5th year |
|---------------------------------------------------------------------------|-------|----------|----------|----------|----------|
| On a scale of 1–10, how difficult do you feel it is to place implants as compared to other dental procedures? |       | 6 (1.2)  | 10 (2.0) | 18 (5.7) | 25 (7.4) | 70 (21.3) |
| 1. Rs. 20,000–25,000 ($150–175)                                          | 695 (40.9) | 172 (45.7) | 27 (8.5) | 18 (5.7) | 83 (24.6) |
| 3. Rs. 15,000–20,000 ($100–125)                                         | 268 (15.6) | 80 (21.3) | 28 (8.5) | 15 (4.4) | 124 (36.4) |
| 5. Do not know                                                          | 597 (35.1) | 156 (41.5) | 132 (41.8) | 138 (41.8) | 65 (18.8) |
| How much do you feel is the initial set-up cost required to incorporate implant surgery into practice? |       | 6 (1.2)  | 10 (2.0) | 18 (5.7) | 25 (7.4) | 70 (21.3) |
| 1. Yes, implants are here to stay                                       | 422 (24.8) | 124 (33.0) | 219 (64.6) | 219 (64.6) | 20 (5.9)  |
| 2. No, implants are not here to stay                                    | 422 (24.8) | 124 (33.0) | 219 (64.6) | 219 (64.6) | 20 (5.9)  |
| 3. No, too invasive for patient acceptance                              | 114 (6.7)  | 31 (8.2)  | 114 (6.7)  | 31 (8.2)  | 16 (4.8)  |
| 4. No, other reasons (please specify)                                   | 33 (19.5)  | 10 (2.9)  | 33 (19.5)  | 10 (2.9)  | 2 (0.6)   |

and methods, consensus workshops drawing solutions to obstacles and providing recommendations and clear guidelines to include implant dentistry in undergraduate curriculum of developing countries like Nepal, so that students will be able to respond properly to the increasing number of patients with queries about dental implants.

ACKNOWLEDGEMENTS

We would like to thank our colleagues at various dental colleges of Nepal and the participants for their support during this study.

DATA AVAILABILITY

Data will be made available on request.

ADDITIONAL INFORMATION

Supplementary information is available for this paper at https://doi.org/10.1038/s41405-018-0009-1.

Competing interests: The authors declare no competing interests.

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