

# Out-Look of Undergraduate Dental Students on Dental Implants in Bhopal, Central India

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## Abstract

**Introduction:** Through the enhancement and innovation in dentistry, dental implants provide the top most dental care by providing comfortable fixed teeth to the people. The information which is available to the patients regarding the implant procedure and its success is often fragmentary. It is the liability of dentist or concerned authority to educate or spread cognizance amongst people on dental implants being a contemporary dental treatment modality. It is imperative to know the approachability of undergraduate dental students on dental implants initiated as the felt need of the study.

**Materials & Method:** A cross-sectional survey was conducted amid dental students of Bhopal district. Survey was inclusive of entire undergraduate students of various dental colleges. Over-all 2400 students comprise target population, 25% (600 students) of the intended population were selected by simple random sampling method and thus 600 questioners were distributed to the students. Out of 600 questionnaires which were distributed only 550 questionnaires were returned amongst which 480 students had filled the complete questionnaire. And thus, 480 questionnaires were analysed.

**Result:** Out of 480 students who were interviewed, 426 (88.75%) were aware of the implant procedure. A statistical difference existed between levels of education and the awareness about implants out of 426 (88.75%) students were aware about the implant procedure 28 (6.6%) was I year students, 71(16.7%) were II year students, 151(35.4%) were III year students and 176(41.3%) were final year students.

**Conclusion:** The level of knowledge and experience amplified with the academic years, clearly demonstrated improvement in familiarity about fixed prosthesis, educators need to place greater emphasis on dental implant education in dental colleges.

**Keywords:** Dental implants, Dental implant education, Knowledge, Treatment awareness, Undergraduate dental students

## INTRODUCTION

Dental implantology is recklessly becoming a branch of learning in the field of dentistry. It has been recorded as the most noteworthy advancement in dentistry within the last 5 decades. The interest in aesthetically flawless teeth and also a nearly natural substitute of teeth such as an implant supported over denture, has grown over the years.<sup>1</sup> Dental implant is an synthetic tooth root placed in the jaws to hold a replacement tooth or bridge. They are a supreme option for people with good general and oral health who have lost their dentition due to various dental

problems like periodontal disease, dental caries, an injury or for any other reason. So, for the management of these edentulous patient dental implants are used as a treatment option which improves the quality of life, denture retention, its stability and functional efficiency.<sup>2-4</sup>

There is an increased number of loaded implants continuously from 170,000 in 1999 to 380,000 in 2002 according to implant surgeons and dentist. It is predictable that there is another increase in the coming years to as many as 500,000 implants per year.<sup>1</sup> Advantage of transplant technologies create more possibilities in implication areas

as well as prosthetic rehabilitation.<sup>1</sup> After a surveillance period of at least 5 years, collective implant success rate in patients with partially edentulous arches were between 96.6% and 98.5% and the growing implant supported crown achievement rate was 93.7%.<sup>7</sup> Since implant treatment is an optional procedure,<sup>10</sup> absolute information on implant treatment and substitute therapies must be provided to guide the patient in the selection of the most appropriate opportunity.<sup>11</sup> The information which is accessible to the patients regarding the implant procedure and its achievement is often fragmentary and this crisis is more compounded in developing nations where dentist and the concerned authorities are not doing enough to instruct and swell knowledge amongst people about dental implants being a dental treatment modality.<sup>12</sup> It is imperative to know whether undergraduate dental students are aware of dental implants as a treatment option and whether the information that they have is close to reality or not. Awareness amongst the dental students concerning the dental implant can help in eliminating any negative reflection of the procedure that may have been caused due to lack of adequate communication since they will be the future dentist, it would be their prime responsibility to spread awareness about this new advancement amongst the common man. Thus, a study was conducted which aimed to determine the awareness about dental implants amongst the students of People's College of Dental Science and Research Centre, Bhopal.

## MATERIAL & METHODOLOGY

A cross sectional study was carried out from 15<sup>th</sup> January 2013 to 15<sup>th</sup> February 2013, amongst the undergraduate students from first to final year of Bhopal district. Overall 2400 students comprised the target population, 25% (600 students) of the intended population were selected by simple random sampling method and thus 600 questioners were distributed to the students. The information was collected using a self explanatory questionnaire which was grouped under

- A. Gender: Male, Female
- B. Education levels: First to final year undergraduate students.
- C. Mean Age: 18 to 25 years.

Out of 600 questionnaires which were distributed only 550 questionnaires were returned amongst which 480 students had filled the complete questionnaire. And thus, 480 questionnaires were analysed.

Ethical approval was obtained from the ethical committee of People's college of dental sciences and research centre at the beginning of the study. A written permission was

taken from the head of the other institutes to conduct the study in their college. The participants were informed about the procedure and were assured of the confidentiality of the collected data.

### Inclusion Criteria

Only the first year to final year dental students of Bhopal district were included in the study.

Age group: Only 18 to 25 years of age group students were participated in the study.

### Exclusion Criteria

Dental Post graduate students and interns were excluded in the study.

### Questionnaire

The questionnaire was finalized after conducting a pilot test in 20 students to check the reliability and validity of questionnaire. The questionnaire included 8 special closed ended questions about implants to gauge the student's awareness, perceptions of oral hygiene considerations, durability and cost of an implant supported over denture.<sup>1</sup> The questionnaires were distributed to the students, visiting their respective colleges of Bhopal. Sufficient time was given to them to fill the questionnaire and the answered questionnaire was collected at their subsequent classes. The nature and purpose of the assessment was explained to the subjects.

### Data Analysis

The data was analyzed using SPSS (statistical package for social sciences) version 17. The association of the responses to the questionnaire was seen with gender and the education levels using chi-square test and P value < 0.05 was considered statistically significant.

## RESULT

Out of 480 students who were interviewed only 426 (88.75%) were aware of the implant procedure from which 220(51.6%) were males and 206(48.4%) were females, while remaining 54 students had no knowledge about the implant procedure. Thus, a statistically significant difference was found among the boys and girls in term of mean level of knowledge and attitude towards dental implants.

A statistical difference existed between levels of education and the awareness about implants which was concluded as the results showed that out of 426 students who were aware about the implant procedure 28 (6.6%) were I year students, 71(16.7%) were II year students, 151(35.4%) were III year students and 176(41.3%) were final year

students. Hence, a statistically significant difference was found among the years of study, in term of mean level of knowledge and their attitude towards dental implants. Final year students had more knowledge about dental implants.

### Results According to Analysis of the Questionnaire

Among those students who were aware of dental implants from their dentist i.e 159 (33.12%), the number of males were 77(48.4%) and females were 82 (51.6%), while 240 (50%) who had awareness about it from other sources of information like the books, magazines and internet included 126 (52.5%) males and 114(47.5%) females (Table 1).

Out of 159 students who had knowledge about dental implants from their dentist, 16 (10.1%) were I year students, 17 (10.7%) were II year students, 61 (38.4%) were III year students and 65 (40.9%) were final year students. While the students who were aware about it from other sources included 53(22.1%) of I year students, 11(4.6%) of II year students, 82 (34.2%) of III year students and 94 (39.2%) of final year students (Table 2).

Amongst the 480 students who were questioned, 265(55.2%) students had knowledge about the implant placement procedure out of which 137(51.7%) were males and 128 (48.3%) were females (Table 1) which included 39(14.7%) of I year students, 20(7.5%) of II year students,

**Table 1: Distributions of the response of participants according to the gender**

	Gender		Total	Chi-square P-value
	Male n (%)	Female n (%)		
Are you aware of the implant therapy as an alternative for missing teeth?				
Yes	220 (51.6)	206 (48.4)	426 (100)	0.775
No	29 (53.7)	25 (46.3)	54 (100)	
Total	249 (51.9)	231 (48.1)	480 (100)	
If yes, then where did you get to know about it?				
If no, then	29 (53.7)	25 (46.3)	54 (100)	0.53
From your dentist	77 (48.4)	82 (51.6)	159 (100)	
Books/magazines/internet	126 (52.5)	114 (47.5)	240 (100)	
Others	17 (63)	10 (37)	27 (100)	
Total	249 (51.9)	231 (48.1)	480 (100)	
Do you have the knowledge of the implant placement procedure?				
Yes	137 (51.7)	128(48.3)	265 (100)	0.93
No	112 (52.1)	103 (47.9)	215 (100)	
Total	249 (51.9)	231 (48.1)	480 (100)	
What do you estimate as the functional life of an implant (years)?				
<10 years	38 (55.1)	31 (44.9)	69 (100)	0.074
10-20 years	119 (56.7)	91 (43.3)	210 (100)	
No idea	92 (45.8)	109 (54.2)	201(100)	
Total	249 (51.9)	231 (48.1)	480 (100)	
Up to which amount are you prepared to pay as an additional payment for implant?				
Rs.5000	47 (58)	34 (42)	81 (100)	0.106
Rs.7000	31 (41.9)	43 (58.1)	74 (100)	
Rs.15000	94 (56.3)	73 (43.7)	167 (100)	
No idea	77 (48.7)	81 (51.3)	158 (100)	
Total	249 (51.9)	231 (48.1)	480 (100)	
What do you anticipate as oral hygiene for the care of implants compare with natural teeth?				
More	103 (48.8)	108 (51.2)	211 (100)	0.084
Similar	82 (58.6)	58 (41.4)	140 (100)	
Less	7 (77.8)	2 (22.2)	9 (100)	
No idea	57 (47.5)	63 (52.5)	120 (100)	
Total	249 (51.9)	231 (48.1)	480 (100)	
Are you willing to undergo an implant procedure if it is needed as a treatment option?				
Yes	117 (46.2)	136 (53.8)	253 (100)	0.006*
No	55 (66.3)	28 (33.7)	83 (100)	
May be/ not sure	77 (53.5)	67 (46.5)	144 (100)	
Total	249 (51.9)	231 (48.1)	480 (100)	
If no, then what is the reason?				
Willing to undergo procedure.	117 (46.2)	136 (53.8)	253 (100)	0.005*
Very costly	25 (78.1)	7 (21.9)	32 (100)	
Surgical procedure	23 (53.5)	20 (46.5)	43 (100)	
Not to clear about the procedure	84 (55.3)	68 (44.7)	152 (100)	
Total	249 (51.9)	231 (48.1)	480 (100)	

\*=P value is statistical significant

**Table 2: Distributions of the response of the participants according to the hierarchy of dental students**

	I N (%)	II N(%)	III N(%)	IV N(%)	Total	P-value
Are you aware of the implant therapy as an alternative for missing teeth?						
Yes	28 (6.6)	71 (16.7)	151 (35.4)	176 (41.3)	426 (100)	0.00*
No	10 (18.5)	28 (51.9)	16 (29.6)	0 (0)	54 (100)	
Total	81 (16.9)	56 (11.7)	167 (34.8)	176 (36.7)	480 (100)	
If yes, then where did you get to know about it?						
If no, then	10 (18.5)	28 (51.9)	16 (29.6)	0 (0)	54 (100)	0.00*
From your dentist	16 (10.1)	17 (10.7)	61 (38.4)	65 (40.9)	159 (100)	
Books/magazines/internet	53 (22.1)	11 (4.6)	82 (34.2)	94 (39.2)	240 (100)	
Others	2 (7.4)	0 (0)	8 (29.6)	17 (63)	27 (100)	
Total	81 (16.9)	56 (11.7)	167 (34.8)	176 (36.7)	480 (100)	
Do you have the knowledge of the implant placement procedure?						
Yes	39 (14.7)	20 (7.5)	86 (32.5)	120 (45.3)	265 (100)	0.00*
No	42 (19.5)	36 (16.7)	81 (37.7)	56 (26)	215 (100)	
Total	81 (16.9)	56 (11.7)	167 (34.8)	176 (36.7)	480 (100)	
What do you estimate as the functional life of an implant (years)?						
<10 years	4 (5.8)	4 (5.8)	7 (10.1)	54 (78.3)	69 (100)	0.00*
10-20 years	43 (20.5)	9 (4.3)	65 (31)	93 (44.3)	210 (100)	
No idea	34 (16.9)	43 (21.4)	95 (47.3)	29 (14.4)	201 (100)	
Total	81 (16.9)	56 (11.7)	167 (34.8)	176 (36.7)	480 (100)	
Up to which amount are you prepared to pay as an additional payment for implant?						
Rs. 5000	23 (28.4)	11 (13.6)	25 (30.9)	22 (27.2)	81 (100)	0.00*
Rs. 7000	8 (10.8)	5 (6.8)	23 (31.1)	38 (51.4)	74 (100)	
Rs. 15000	17 (10.2)	7 (4.2)	61 (36.5)	82 (49.1)	167 (100)	
No idea	33 (20.9)	33 (20.9)	58 (36.7)	34 (21.5)	158 (100)	
Total	81 (16.9)	56 (11.7)	167 (34.8)	176 (36.7)	480 (100)	
*What do you anticipate as oral hygiene for the care of implants compare with natural teeth?						
More	44 (20.9)	13 (6.2)	66 (31.3)	88 (41.7)	211 (100)	0.00*
Similar	17 (12.1)	8 (5.7)	58 (41.4)	57 (40.7)	140 (100)	
Less	0 (0)	0 (0)	2 (22.2)	7 (77.8)	9 (100)	
No idea	20 (16.7)	35 (29.2)	41 (34.2)	24 (20)	120 (100)	
Total	81 (16.9)	56 (11.7)	167 (34.8)	176 (36.7)	480 (100)	
*Are you willing to undergo an implant procedure if it is needed as a treatment option?						
Yes	33 (13)	16 (6.3)	102 (40.3)	102 (40)	253 (100)	0.00*
No	8 (9.6)	20 (24.1)	23 (27.7)	32 (38.6)	83 (100)	
May be/not sure	40 (27.8)	20 (13.9)	42 (29.2)	42 (29.2)	144 (100)	
Total	81 (16.9)	56 (11.7)	167 (34.8)	176 (36.7)	480 (100)	
*If no, then what is the reason?						
Willing to undergo procedure	33 (13)	16 (6.3)	102 (40.3)	102 (40.3)	253 (100)	0.00*
Very costly	0 (0)	8 (25)	5 (15.6)	19 (59.4)	32 (100)	
Surgical procedure	3 (7)	3 (7)	15 (34.9)	22 (51.2)	43 (100)	
Not to clear about the procedure	45 (29.6)	29 (19.1)	45 (29.6)	33 (21.7)	152 (100)	
Total	81 (16.9)	56 (11.7)	167 (34.8)	176 (36.7)	480 (100)	

\* = P value is statistical significant

86(32.5%) of III year students and 120 (45.3%) of final year students (Table 2). While 215 (44.8%) students had no knowledge about implant placement procedure.

With regards to the durability of implants, 210 (43.75%) students expected them to last between 10-20 years out of which 119 (56.7%) were males and 91(43.3%) were females (Table 1). Only 69 (14.8%) students estimated the durability to be less than 10 years. 201(41.8%) students had no idea about the durability of implants.

Amongst students who answered that the durability of implants last between 10-20 years, 43 (20.5%) were I year

students, 9 (4.3%) were II year students, 65 (31%) were III year students and 93 (44.3%) were final year students (Table 2).

The readiness of students to bear the cost of an implant treatment was not uniform, 167 (34.8%) students were prepared to make an additional payment of up to Rs.15000 out of which 94 (56.3%) were males and 73(43.7%) were females (Table 1) in which 17 (10.2%) were I year students, 7(4.2%) were II year students, 61(36.5%) were III year students and 82(49.1%) were final year students (Table 2) but 74 (15.5%) students agreed only up to Rs.7000 out of which 31(41.9%)



were males and 43 (58.1%) were females (Table 1) out of which 8(10.8%) were I year students, 5 (6.8%) were II year students, 23 (31.1%) were III year students and 38 (51.4%) were final year students (Table 2) and 81 (16.8%) students were ready to pay up to Rs. 5000 out of which 47(58%) were males and 34 (42%) were females in which 23(28.4%) were I year students, 11(13.6%) were II year students, 25 (30.9%) were III year students and 22(27.2%) were final year students and 158 students had no idea about the additional payment for implants out of which 77 (48.7%) were males and 81(51.3%) were females (Table 1) in which 33(20.9%) were I year students, 33(20.9%) were II year students, 58 (36.7%) were III year students and 34 (21.5%) were final year students (Table 2).

Concerning oral hygiene in the care of implants, out of 480 students 211(44%) students questioned expected an implant- supported over denture to require more care than natural teeth out of which 103(48.8%) were males and 108 (51.2%) were females (Table 1) in which 44(20.9%) were I year students, 13 (6.2%) were II year students, 66 (31.3%) were III year students and 88(41.7%) were final year students (Table 2) while 140 (29.1%) students estimated the care to be similar to natural teeth in which 82 (58.6%) were males and 58 (41.4%) were females (Table 1) in which 17 (12.1%) were I year students, 8(5.7%) were II year students, 58 (41.4%) were III year and final year students both (Table 2). Only 9 (1.8%) students expected that less care would be needed out of which 7 (77.8%) were males and 2 (22.2%) were females (Table 1) in which I and II year students were 0 %, 2(22.2%) were III year students and 7 (77.8%) were final year students (Table 2), 120 (25%) students had no knowledge about the oral hygiene care of implants compared with natural teeth out of which 57 (47.5%) were males and 63 (52.5%) were females in which 20 (16.7%) were I year students, 35 (29.2%) were II year students, 41 (34.2%) were III year students and 24(20%) were final year students.

Among students who had knowledge, were further questioned about dental implants as a treatment option if needed. Out of them- 253 (52.7%) students were willing to use the dental implants as a treatment, 117 (46.2%) were males and 136 (53.8%) were females (Table 1) in which 33 (13%) were I year students, 16 (6.3%) were II year students, 102 (40%) were III year and final year students (Table 2). 83 (17.2%) students were not willing to use them out of which 8(23.5) were males and 26(76.5%) were females (Table 1) in which 3(8.8%) were I year students, 20 (24.1%) were II year students, 23 (27.7%) were III year students and 32(38.6%) were final year students (Table 2) and 144 (30%) students who were not so sure about implants as a treatment option included 77 (53.5%) of males and 67 (46.5%) of females in

which 40(27.8%) were I year students, 20 (13.9%) were II year students, 42 (29.2%) were III year students and final year students (Table 2).

Amongst the students who did not consider implants as a treatment option, 32 (38.5%) students cited high cost as the main reason for the refusal, while 43(51.8%) students stated that it was a surgical procedure while out of 480 students 152 (31.6%) students were not clear about the procedure.

## DISCUSSION

Dental implants appear to be an efficacious substitute for lost teeth. Through more or less specialist, often ambivalent, reporting by various media, this procedure is increasingly becoming focus of patient's interest.<sup>13</sup> A survey was accomplished midst the undergraduate students of Bhopal district concerning the awareness about implants as a treatment modality and their inclination to endure this treatment if needed.

A simple questionnaire was made and filled by undergraduate dental students of Bhopal district. Among the 480 students that were questioned, 88.75% students had heard about the dental implants as a treatment modality. Most of them who were aware of implants were final year students (41.3%). A statistical variance occurred between the levels of education and the awareness about implants, with greater awareness in students of final years. In the study steered by Choudhary R<sup>14</sup> in (23.24%) urban Indian population were perceptive of oral implants. In a study in Jaipur by Kaurani P<sup>12</sup> 38% were insightful of dental implants.<sup>12</sup> In the present study, the study was accomplished among dental students so the perception rate is additional which is quiet obvious, knowledge among dental students as compare to general populations is enhanced.

Our study shows that 50% students learnt about dental implants from their print and electronic media which is in distinction to that reported by earlier researchers. Kaurani P et al.<sup>12</sup> reported dentist to be the focal source of information.<sup>12</sup> In the study conducted by J. Rustemeyer et al<sup>1</sup> reported that the contribution of internet, books and magazines was very low. It was recorded by Zimmer<sup>15</sup> in 1992 that only 17% of the people were cited dentist as a source of information. In our study in only 32.12% of cases dentists were first source for their awareness, linking upper study dentists have the most effective role in awareness about dental implants. In the existing study, this clearly indicates the lack of efforts by dentists and the governing bodies regarding taking necessary steps for creating consciousness amongst the people. It appears that media plays a substantial role in educating students about dental implants. The important

role of internet and print reflects increased access to internet source and its role will undoubtedly proliferated intensely.

Tapper et al also showed 54% of patient believed expected mean durability of implant is 10-20 years and 21% less than 10 years.<sup>16</sup> in the study done by J Rustemeyer et al<sup>1</sup> only 3% of the patients expected durability of less than 10 years.<sup>1</sup> Present study also show that 43.75% students believed expected mean durability is 10-20 years in which 44.3% of students were from final year this means first year students had not adequate information about dental implants and only 14.37 % estimated the durability of implant to be less than 10 years. Final year students are more attentive of it as dental implant is included in their curriculum and thus the result were statistical substantial.

The cost of implant is a major argument against implant therapy. J. Rustemeyer et al<sup>1</sup> showed that 23% of patients were primed to make an additional payment of up to 2000 Euro. In the present study 34.79 % of students were prepared to pay Rs. 15000 as an additional payment for implants in which 50% of students are from final years indicating that they are more aware about importance of dental implants procedure and its cost as dental implants have significant advantages over conventional removable dentures and 33% of students had no idea about the expenses of implants. Thus the result shows statistical significant differences amongst the level of education.

Many patients are unaware of the complexity of planning, realization and aftercare of an implant-supported over denture, but the fallacy that implants are less care intensive than natural tooth was not widespread among the patients.<sup>1</sup> In present study only 2% of students expected a lower need for care of implants compare with natural teeth. 44% of the students expected higher level of care because they consider that dental implants do not have the biological zone that a natural tooth has which keeps bacteria out so dental implants need more care as compare to natural tooth. Results analogous to findings in this study were reported by J. Rustemeyer et al.<sup>1</sup> from their survey only 7% of the patients expected that less care would be needed, 31% expected that implant require more care than natural teeth, 58% estimated the care to be similar. Another study done by Tepper et al<sup>16</sup> were reported from a survey of 1000 patients that only 4% believed an implant supported set to be less care intensive than natural teeth, 46% expected higher level of care and 44% a comparable level of care.

The study done by Satpathy A et al<sup>17</sup> reported that 39.29% felt dental implants needed less care in comparison to natural teeth and 37.49% felt they are cleaned just like natural teeth, 23.24% did feel that they require more care than the natural teeth.

Amongst 480 students, 52.7% students are willing to undergo implant procedure while only 17% of students were not willing to undergo the procedure in which 38.5% found this treatment option to be costly and 52% was not willing due to fear of surgical procedure and 31% of students are not sure whether they going for treatment procedure or not as they are not clear about the procedure. Dental implants are so costly because they are treated like major surgery and require the presence of a full surgical team. The study done by Pragati K<sup>12</sup> reported different results in their study only 29% of the people were willing to use dental implants as a treatment and 56% people were not willing to undergo the procedure because 61.6% found this treatment option to be costly and 19.6% stated that it was a surgical procedure and 18.7% were not clear about the procedure. High cost to be a major deterrent to dental implants. A study by Palmqvist et al<sup>18</sup> demonstrated that patients could be restricted more by financial condition than by the process of implant therapy itself. The value of money in dental healthcare is also highly influenced by social traditions, such as what patients are used to receiving without payment or for subsidized prices depending on their health system. As compare to previous studies present study shows that the higher number of students avoid implant procedure due to fear of surgery because this study was done on younger group of inhabitants who usually avoid surgical procedure while other previous studies was done on elder group population. This information indicates that dental surgeons need to allay the fear in patients regarding the dental implants treatment by explaining surgical procedure carefully and comprehensively.

## CONCLUSION

It was concluded that the knowledge about dental implants in the syllabus of dental students was not sufficient to increase the level of knowledge about dental implants. It is possible that some students may always feel more information is required since in a modern curriculum all the facts for every condition cannot be covered. However, Level of knowledge and experience increased with the academic year, clearly demonstrated improvement, educators need to place greater emphasis on dental implant education in dental colleges. This study revealed a need for a more structured teaching program, with increased emphasis on knowledge of diagnostic and therapeutic options with dental implant therapy is, therefore, mandatory for dental students.

## PUBLIC HEALTH SIGNIFICANCE

It is the prime concern of dentists to convey optimistic oral health knowledge and behaviour to the the public So

apart from the post graduate dental surgeons in the dental institutions, the undergraduate students also have thorough knowledge about dental implants and this is done through clinic work and organised discussions to these students in the field of dental implantology to increase their knowledge and skill. So that the Knowledge of dental implants as a option for the alternative of missing teeth among the public can also be undertaken by these students as a health workers. The patients and indeed the public who have interacted to these undergraduate students have easy access through formal or informal interactions. Therefore, their knowledge of the different treatment options available in the hospitals can go a long way to imparting positively to patients' instruction and selection of treatments.

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