



## Evaluation of Knowledge and Attitude towards Prosthodontic Rehabilitation among Mithilanchal Population

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### Abstract

**Introduction:** Dental care has always been an integral part of general wellbeing. Realization and consciousness of the same plays a significant role in determining the dental health of an individual. Miserable oral conditions and loss of teeth including complete loss or partial loss, is nearly the same as to dental death. Awareness and knowledge of the oral health is important for the acceptance of artificial prosthesis by the patient. The Prosthodontic health status and Prosthodontic rehabilitation needs of Mithilanchal population and its adjoining areas are not well documented. Hence this study has been designed to evaluate the level of knowledge, attitude and behavior of a group of people in Mithilanchal Population, Bihar towards the options available for replacing missing teeth and factors preventing them from taking treatment.

**Materials and Methods:** This study was conducted in Mithilanchal population, Bihar population. The Present study is a cross-sectional questionnaire-based survey which was conducted at Mithila Minority Dental college and Hospital, Darbhanga and the surrounding areas. The study involved sample population consisting of 200 subjects (113 males, 87 females) of age group more than 25 years. A random selection of samples was done from the patients and people accompanying the patients who has participated in the survey.

Assembled data were statistically examined and scanned using SPSS (statistical package for social sciences) version 25.0 and descriptive statistics carried using Med Calc software along with chi- squared test at a significance level of  $p \leq 0.05$ .

**Results:** This sample population consisted of 56.5% males and 43.5% females with the age group of more than 25 years. Out of the 200 participants, 85.5% were aware of the replacement of teeth with no statistical significance difference among them. 84.0% had the positive attitude towards replacement of missing teeth and towards the prosthodontic rehabilitation and majority of people preferred fixed partial denture (41.7%) as the mode of replacement as compared to other mode of prosthesis because of the better chewing ability, speech and esthetics. Financial constraints (45.7%) is found to be the major reason that many of them did not went for the prosthesis, considering the fact that they had the knowledge for replacement of teeth. This study helped in assessing patient's compliance and awareness and the results obtained by analyzing individuals thought process regarding approval or disagreement in the selection of prosthesis can be utilized in upgrading patient's motivation which will lead to favorable decision opting in future.

**Keywords:** Knowledge; Awareness, Survey; Prosthodontic Treatment

## Introduction

Oral health is undoubtedly an indistinguishable part of general health. Constant recognition of it plays a significant role in determining the dental well-being of an individual. Undoubtedly, teeth have important role to play in overall health of an individual. Psychology of the individual gets affected due to long term loss of teeth and furthermore overall health of individual also gets affected adversely. Awareness and knowledge of the oral health is important for the acceptance of artificial prosthesis by the patient.

The availability and accessibility of dental care is well reflected by the attitudes of patients who has lost all his teeth and supporting structures leading to an end of oral health. The function of stomatognathic system such as mastication, phonetics and esthetics gets affected due to absence of teeth leading to significant disabilities.

Intake of favorite and delicious foods is limited due to lose teeth and poor oral hygiene. It also affects the general health of patients. A no. of factors such as anatomical, physiological, psychological and prosthodontic factors determine the patient's adaptability to a new dental prosthesis which further depends on the attitude and awareness of the patients towards prosthetic treatment.

Comfort, function and aesthetic are the three main factors that determine the success of any kind of prosthesis. Comfort and function are determined by mechanical and biological factors. Social and cultural values affect the aesthetic aspect of patient and attitude of an individual. Since, emphasis is laid upon patient mediated concerns in prosthetic treatment planning, understanding patient's knowledge, attitude towards prosthetic replacement prior to undergoing treatment is the necessity.

The replacement of missing teeth in a bad dentition to restore function is obtained through prosthetic treatment by the means of removable and fixed prosthesis.

In order to understand the attitude and behavior of people towards oral health and Prosthodontic treatment needs, it is important to know the awareness and knowledge of people regarding the same which certainly plays an important role in their acceptance to prosthetic rehabilitation [3].

A few studies have been done in different parts of India like Belgaum, Songadh and Amargadh by surveying method regarding the awareness and attitude of patients towards the replacement of teeth.

According to Shigli K, Yusuf and Fakiha, awareness and attitude towards replacement of teeth are to be taken into consideration to improve the knowledge and their compliance with acceptance of different prostheses.

It is necessary to know the prosthetic status and prosthetic need of an individual to promote the oral health. Various treatment outcomes and expectations influence in a way to the treatment planning; hence it is necessary to evaluate the preference of need of prosthesis.

It is not very well recorded about the prosthodontic rehabilitation requirements and wellness status amongst the Mithilanchal population and its adjoining places. Hence this study has been made in such accordance that the level of knowledge, attitude and behavior of a group of people in Mithilanchal Population, Bihar can be assessed and calculated towards the choices and opportunities available for replacing missing teeth and elements stopping them from availing treatment.

## Materials and Methods

The Present study is a random sampling questionnaire-based survey which was conducted at Mithila Minority Dental college and Hospital, Darbhanga and its adjoining areas. The study involved sample population consisting of 200 subjects (113 males, 87 females) of age group more than 25 years.

### Inclusion criteria

1. All people of age group > 25 years.
2. High school educational level and above subjects.
3. All partially edentulous and completely edentulous subjects.

### Exclusion criteria

1. Dentist, dental technicians.
2. Dental assistants.
3. Physically challenged subjects.

### Materials

Following equipment's are being used in the study:

- 1) A questionnaire containing 11 questions.
- 2) A mouth mirror; explorer.
- 3) Tweezer.

### Method

The study samples of 200 subjects were randomly selected from patients, persons accompanying the patients and from the residents of adjoining areas of Mithilanchal population of Darbhanga, Bihar.

A self- made questionnaire containing 11 questions is being designed on general understandings and perceptions for different Prosthodontic treatment procedures and probable causes for not accepting or ignoring treatments are measured.

Various details in terms of name, age, gender of the subjects was also recorded in questionnaire. Every person participating in the survey were asked to sign at the end.

1) Are you aware that missing teeth have to be replaced? Yes /No /No Answer
2) Various types of replacement that you are aware of: a) Complete Denture b) Removable partial Denture c) Fixed partial Denture d) Implants
3) Do you have any missing teeth? Yes/No If yes Anterior Posterior
4) How long have the teeth been missing?
5) Did you get them replaced? Yes/No
6) Attitude towards the prosthodontic rehabilitation? (Willing- ness of patients to replace teeth) Yes/No
7) If replaced then type of replacement perceived? a) Complete denture b) Removable denture c) Fixed partial denture d) Implant supported prosthesis
8) If not replaced then why? a) Financial constraints b) Inadequate knowledge c) Not motivated
9) Where would you go for replacement of missing teeth? a) Dental clinic b) Dental college c) General hospital d) Others
10) Is there lack of prosthodontic treatment facility nearby or in your locality? Yes/No
11) Are you aware that there is a dental college where replace- ment of missing teeth is done in Ekmighat, Darbhanga? Yes/No

Table: Questionnaire used in the survey.

Procedure for collection of data

The questionnaire will be completed personally for each of the patient who will agree to participate in the study, in the form of an interview which will appear like normal conversation to allow for introduction and exploration of ideas and probe more deeply.

Following the completion of interview, the patients will be asked to sign at the end of questionnaire to mark their consent.



Figure1



Figure2

Statistical analysis

The statistical procedure was carried out in 2 steps:

- 1. Data compilation and presentation.
- 2. Statistical analysis.

Data compilation and presentation

Systematically all the data were compiled, transformed from a pre-coded proforma to a computer and a master table was prepared. The total data obtained was showcased as individual tables and graphs.

Statistical analysis

Descriptive statistics has been performed in the present study. Results are obtained by calculating mean and standard deviation for the continuous variables. Categorical variables are presented as absolute numbers and percentage.

The software used for the statistical analysis were SPSS (statistical package for social sciences) version 25.0 and MedCalc software.

The statistical tests used were:

- Unpaired or Independent t-test is used for comparison of mean value between 2 groups when the data follows normal distribution.
- Chi-square test is used to investigate whether distributions of categorical variables differ from one another.

- The p-value was taken significant when less than 0.05 ( $p < 0.05$ ) and confidence interval of 95% was taken.

The following formulas were employed for calculation for various parameters.

### Mean/average

Mean or average is defined as the sum of all the given elements divided by the total number of elements.

Mean = sum of elements/number of elements

It is denoted by the letter  $\bar{X}$ .

$$\bar{X} = \frac{\sum X}{n}$$

No. of observations ( $n$ )

### Standard deviation

The standard deviation of a statistical population, a data set, or a probability distribution is the square root of its variance. Standard deviation is a widely used measure of the variability or dispersion.

It shows how much variation there is from the "Average" or Mean.

It is denoted by the letter  $\sigma$ .

$$\begin{aligned} \text{For Small samples, } n < 30 \quad SD &= \sqrt{\frac{\sum (X - \bar{X})^2}{n-1}} \\ \text{For Large samples, } n > 30 \quad SD &= \sqrt{\frac{\sum (X - \bar{X})^2}{n}} \end{aligned}$$

### Shapiro-Wilk test

The Shapiro-Wilk test was used for testing the normality (uniformity of the distribution of the data) of the data. This approach is limited to samples between 3 and 50 elements.

The basic approach used in the Shapiro-Wilk (SW) test for normality is as follows:

Rearrange the data in ascending order so that  $x_1 \leq \dots \leq x_n$ .

Calculate SS as follows:

$$SS = \sum_{i=1}^n (x_i - \bar{x})^2$$

If  $n$  is even, let  $m = n/2$ , while if  $n$  is odd let  $m = (n-1)/2$ .

Calculate  $b$  as follows, taking the  $a_i$  weights (based on the value of  $n$ ) in the Shapiro-Wilk Tables. Note that if  $n$  is odd, the median data value is not used in the calculation of  $b$ .

$$b = \sum_{i=1}^m a_i (x_{n+1-i} - x_i)$$

Calculate the test statistic  $W = b^2/SS$

This gives the p-value for the test.

A non-significant test means the sample distribution is shaped like a normal curve (uniform distribution of the values around an average value or a measure of central tendency) and Parametric test are to be used.

### Unpaired or independent 'Student's' t-test

The unpaired, or "independent samples"  $t$ -test is used when two separate independent and identically distributed samples are obtained, one from each of the two populations being compared:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{SE(\bar{X}_1 - \bar{X}_2)}$$

Where:

$\bar{X}_1$  = Mean of the first group

$\bar{X}_2$  = Mean of the second group

$SE(\bar{X}_1 - \bar{X}_2)$  = Standard Error of difference between the 2 means

The degrees of freedom used in this test is  $n_1 + n_2 - 2$ .

### Chi-square test

The Chi square test statistics was calculated as

$$\chi^2 = \sum \frac{(\text{observed frequencies} - \text{expected frequencies})^2}{\text{Expected frequencies}}$$

Expected frequencies

Where,  $\sum$  denotes summation and

$$\text{Expected frequencies} = \frac{\text{Row total} \times \text{Column Total}}{\text{Grand total}}$$

Grand total

The  $\chi^2$  - static follows an  $\chi^2$  distribution with degrees of freedom as  $(r-1) \times (C-1)$ , where  $r$  is the number of rows and  $c$  is the number of columns in the tabulated data.

The calculated value is then compared with the theoretical value of  $\chi^2$  distribution for the given degree of freedom to obtain the level of significance.

### Level of significance (p-value)

- The maximum probability of rejecting a correct null hypothesis.
- In testing a given hypothesis, the maximum probability with which we would be willing to take risk is called level of significance of the test:

- P-value  $\geq 0.05$  - Non-significant.
- P-value  $< 0.05$  - Significant.
- P-value  $< 0.01$  - Highly significant.
- P-value  $< 0.001$  - Very highly significant.

## Results

The present study was a questionnaire based cross sectional survey which was conducted at Mithila Minority Dental College and Hospital and the surrounding areas to evaluate the level of knowledge, awareness and attitude of a group of Mithilanchal population, Bihar towards the prosthodontic rehabilitation, and the options available for replacing missing teeth and the factors preventing them from availing treatment.

The study sample Population of 200 subjects were randomly selected from the patients and persons accompanying the patients of age group more than 25 years who reported to the Department of Prosthodontics and Crown and Bridge, Darbhanga, Bihar. They consisted of 113 (56.5%) males and 87 (43.5%) females.

Descriptive statistics has been performed in the present study and data obtained from questionnaire forms were subjected to the statistical package for the social sciences (SPSS) version 25.0 and Med Calc software. Mean and standard deviation were used to obtain quantitative data. Qualitative data was obtained using frequencies, percentages and ranges.

The power of the study used in these statistics is 80%.

After compiling and analyzing the various data obtained from questionnaire forms, the following observations in the form of tables and graphs were made.

Gender	Frequency	Percent
Male	113	56.5
Female	87	43.5
Total	200	100.0

**Table A:** General distribution of study population according to gender.

## Inference

This table shows the general distribution of study population according to the gender which comprised of 113 males (56.5%) and 87 females (43.5%).

Age groups	Frequency	Percent
25 - 35 years	122	61.0
36 - 45 years	48	24.0
46 - 55 years	19	9.5
56 - 65 years	9	4.5
Above 65 years	2	1.0
Total	200	100.0

**Table B:** General distribution of study population according to the different age groups.

## Inference

This table shows the general distribution of study population according to different age groups in which maximum frequency of the patients were in the younger age group 25 - 35 years (61.0%) followed by the middle-aged group ranging from 36 - 45 years (24.0%) and 46 - 55 years (9.5%). Older aged groups 56 - 65 years (4.5%) and above 65 years (1.0%) are lesser in number who participated in the study.

Question no. 1 (Awareness of teeth to be replaced)	Male	Female	Total
No	13	15	28
	11.5%	17.2%	14.0%
Yes	99	72	171
	87.6%	82.8%	85.5%
No answer	1	0	1
	0.9%	0.0%	0.5%
Total	113	87	200
	100.0%	100.0%	100.0%
Chi-square value = 2.061, p-value = 0.357 <sup>#</sup>			

**Table 1:** Distribution of comparison of responses for question no.1 (Awareness of teeth to be replaced).

Chi-square test.

<sup>#</sup>: Non-significant difference.

## Inference

This table shows the comparison of responses for question no. 1 regarding the awareness of teeth to be replaced. The result shows that 85.5% (N = 171) of the study population including both males and females has the awareness that they have to replace the missing teeth. There was statistically no significant difference between the genders ( $p > 0.05$ ) using the chi-square test.



Question no. 2 (awareness about the various treatment options)	Male	Female	Total	Chi-square value	p-value
Complete denture	56	45	101	0.416	0.519 <sup>#</sup>
	49.6%	51.7%	50.5%		
Removable denture	53	49	102	1.745	0.186 <sup>#</sup>
	46.9%	56.3%	51.0%		
Fixed partial denture	68	52	120	0.056	0.813 <sup>#</sup>
	60.2%	59.8%	60.0%		
Implant supported prosthesis	30	19	49	0.589	0.443 <sup>#</sup>
	26.5%	21.8%	24.5%		

**Table 2:** Distribution of comparison of responses for question no. 2 (Knowledge about the various prosthetic treatment options).

Chi-square test.

<sup>#</sup>: Non-significant difference.

### Inference

This table shows the comparison of responses for question no. 2 regarding the knowledge about the various prosthetic treatment options. The result shows that out of the 200 individuals, 50.5% (N = 101), 51% (N = 102), 60% (N = 120) and 24.5% (N = 49) had the knowledge about complete dentures, removable partial denture, fixed partial denture and implant supported prosthesis respectively. Statistically, there was no significant difference between males and females ( $p > 0.05$ ). Very few of the individuals were aware of implant supported prosthesis.

Question no. 3 (Do you have missing teeth)	Male	Female	Total
No	8	4	12
	7.1%	4.6%	6.0%
Yes	105	83	188
	92.9%	95.4%	94.0%
Total	113	87	200
	100.0%	100.0%	100.0%
Chi-square value = 0.537, p-value = 0.464 <sup>#</sup>			

**Table 3:** Distribution of comparison of responses for question no. 3 (Do you have any missing teeth?).

Chi-square test.

<sup>#</sup>: Non-significant difference.

### Inference

This table shows the comparison of responses for question no. 3 which is about enquiring if they have any missing teeth. Out of 200 individuals that participated in this study, 94.0% (N = 188) had fewer or lesser teeth. The females showed the higher frequency of missing teeth as compared to males. There was no statistic significant difference between males and females ( $p > 0.05$ ) obtained using chi-squared test.

Question 4 (Duration of missing teeth)					
Gender	Mean	Std. Deviation	Mean difference	t-test value	p-value
Male	30.23	27.71	-2.24	-0.539	0.591 <sup>#</sup>
Female	32.47	29.28			

**Table 4:** Comparison of responses for question no. 4 (Duration of missing teeth).

Unpaired t-test.

<sup>#</sup>: Non-significant difference.

### Inference

The above table depicts the comparison of responses for question no. 4 regarding duration of missing teeth. The result shows that overall timespan of missing teeth among the individuals who participated in the survey was  $30.23 \pm 27.71$  months for males and  $32.47 \pm 29.28$  months for females. The unpaired t-test was used as a tool to find out the mean duration of missing teeth in males and

females. Males and females ( $P = 0.591$ ) were found to be equal in this data survey.

Question no. 5 (Did you get teeth replaced)	Male	Female	Total
No	52 48.1%	44 51.8%	96 49.7%
Yes	56 51.9%	41 48.2%	97 50.3%
Total	108 100.0%	85 100.0%	193 100.0%
Chi-square value = 0.249, p-value = 0.618 <sup>#</sup>			

**Table 5:** Comparison of responses for question no. 5 (Did you get your teeth replaced?).

Chi-square test.

<sup>#</sup>: Non-significant difference.

### Inference

The above table depicts the comparison of responses for question no. 5 which enquired if they have got their teeth replaced. The result showed that out of 200 subjects, 50.3% ( $N = 97$ ) of the participants have got their teeth replaced with different prosthesis. Study showed that mostly females (51.8%) did not get their teeth replaced as compared to males. Equal data were obtained among males and females and hence no difference ( $P > 0.05$ ).

Question no. 6 (Attitude towards the prosthodontic rehabilitation)	Male	Female	Total
No	17 15.0%	15 17.2%	32 16.0%
Yes	96 85.0%	72 82.8%	168 84.0%
Total	113 100.0%	87 100.0%	200 100.0%
Chi-square value = 0.177, p-value = 0.674 <sup>#</sup>			

**Table 6:** Distribution of comparison of responses for question no. 6 (Attitude towards the prosthodontic rehabilitation).

Chi-square test.

<sup>#</sup>: Non-significant difference.

### Inference

The table shows comparison of responses for question no. 6 regarding the attitude towards the prosthodontic rehabilitation. Results showed that attitude of participants towards the replacement of missing teeth with prosthesis were positive using chi-square test. Almost 84% ( $N = 168$ ) of the individuals were positive and were willing to replace their missing teeth. However, there was no significant difference between the genders even though more number of males were willing for the replacement as compared to females.

Question no. 7 (type of replacement perceived)	Male	Female	Total
Complete denture	19 19.8%	15 20.8%	34 20.2%
Removable denture	34 35.4%	20 27.8%	54 32.1%
Fixed partial denture	37 38.5%	33 45.8%	70 41.7%
Implant supported prosthesis	6 6.3%	4 5.6%	10 6.0%
Total	96 100.0%	72 100.0%	168 100.0%
Chi-square value = 2.882, p-value = 0.126 <sup>#</sup>			

**Table 7:** Distribution of comparison of responses for question no. 7 (Type of replacement perceived).

Chi-square test.

<sup>#</sup>: Non-significant difference.

### Inference

The table shows the comparison of responses for question no. 7 regarding the type of replacement perceived. Most of the individuals (41.7%) opted fixed partial denture as option of replacing missing teeth as compared to removable partial denture i.e. (32.1%) and complete denture i.e. (20.2%). Frequency of females (45.8%) was more as compared to males (38.5%) who have chosen fixed partial denture as the mode of restore missing teeth. However, the subjects had very little knowledge about implants, which is why very less no. of people (6%) chose implant supported prosthesis as mode of replacement.

Results showed that statistically there was no measurable difference between males and females using chi-squared test.

Question no. 8 (Reason for not replacing teeth)	Male	Female	Total
Financial constraints	22	20	42
	43.1%	48.8%	45.7%
Inadequate knowledge	19	9	28
	37.3%	22.0%	30.4%
Not motivated	10	12	22
	19.6%	29.3%	23.9%
Total	51	41	92
	100.0%	100.0%	100.0%
Chi-square value = 4.888, p-value = 0.044*			

**Table 8:** Distribution of comparison of responses for question no.8 (Reasons for not replacing missing teeth).

Chi-square test.

\*: Significant difference.

### Inference

From the above results, it is evident that the financial constraints (45.7%) was found to be the main reason for avoiding the prosthodontic treatment followed by inadequate knowledge (30.4%) and not motivated (23.9%).

Not motivated was found to be significantly more common reason for not replacing teeth among females ( $P < 0.05$ ).

Question no. 9 (Place for replacement of teeth)	Male	Female	Total
Dental clinic	41	26	67
	36.3%	29.9%	33.5%
Dental college	69	54	123
	61.1%	62.1%	61.5%
General hospital	3	6	9
	2.7%	6.9%	4.5%
Others	0	1	1
	0.0%	1.1%	0.5%
Total	113	87	200
	100.0%	100.0%	100.0%
Chi-square value = 3.873, p-value = 0.276 <sup>#</sup>			

**Table 9:** Distribution of comparison of responses for question no. 9 (Place for getting the prosthetic replacement of teeth done).

Chi-square test.

<sup>#</sup>: Non-significant difference.

### Inference

The table showed the comparison of responses for question no.9 regarding the place for getting the prosthetic replacement of teeth done. The result showed that out of the 200 participants who participated in the study, 61.5% ( $N = 123$ ) would like to get their prosthetic replacement done in dental college and 33.5% ( $N = 67$ ) get their prosthesis done from the dental clinic. Very few of them opted for general hospitals and others i.e. 4.5% and 0.5% respectively.

Question no. 10 (Knowledge of prosthodontic treatment facility nearby or in your locality)	Male	Female	Total
No	48	32	80
	42.5%	36.8%	40.0%
Yes	65	55	120
	57.5%	63.2%	60.0%
Total	113	87	200
	100.0%	100.0%	100.0%
Chi-square value = 0.665, p-value = 0.415 <sup>#</sup>			

**Table 10:** Comparison of responses for question no. 10 (Knowledge of prosthodontic treatment facility nearby or in your locality).

Chi-square test.

<sup>#</sup>: Non-significant difference.

### Inference

The table shows the comparison of responses for question no. 10 regarding knowledge of prosthodontic treatment facility nearby or in near locality.

Among the 200 people in the study, 60.0% ( $N = 120$ ) informed that there is a lack of prosthodontic treatment facility in their locality or nearby places. While remaining (40.0%) denied from the same (Table 11).

### Inference

The table shows the comparison of responses for question no. 11 regarding the awareness about the availability of prosthetic replacement treatment in Dental College in Ekmighat, Darbhanga.

The result showed that out of the 200 participants, 89.5% ( $N = 179$ ) participants were aware of treatment facilities in dental college. Statistically, there was no significant difference between the genders ( $P > 0.05$ ) using chi-square test, even though comparatively more men were aware of the presence of dental college in Ekmighat.



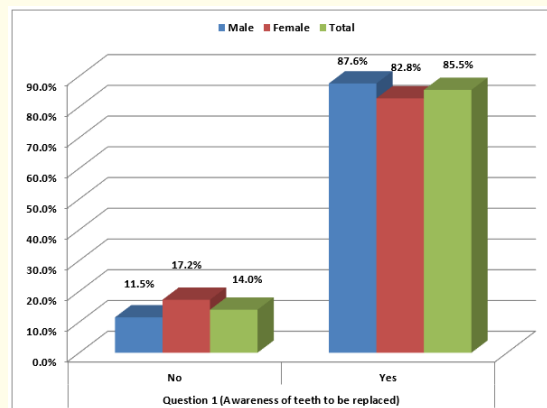
Question no. 11 (Awareness regarding dental college in Ekmighat, Darbhanga)	Male	Female	Total
No	10 8.8%	11 12.6%	21 10.5%
Yes	103 91.2%	76 87.4%	179 89.5%
Total	113 100.0%	87 100.0%	200 100.0%

Chi-square value = 0.753, p-value = 0.386<sup>#</sup>

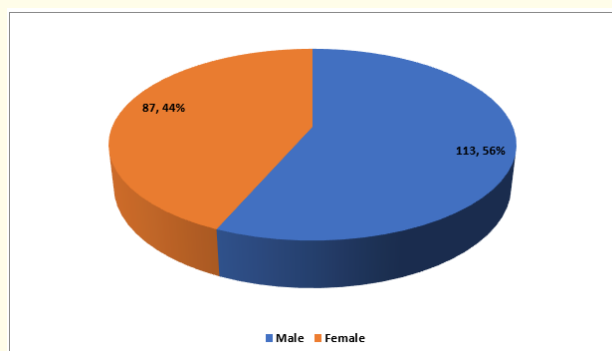
**Table 11:** Distribution of comparison of responses for question no. 11 (Awareness about the availability of prosthetic replacement treatment in Dental College in Ekmighat, Darbhanga).

Chi-square test.

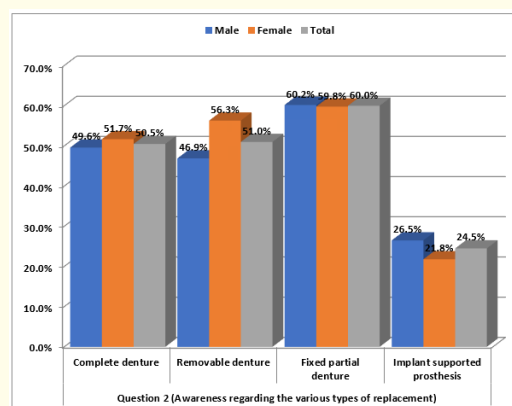
<sup>#</sup>: Non-significant difference.



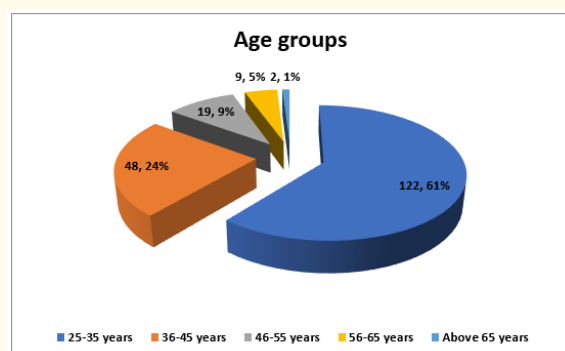
**Graph 1:** Distribution of comparison of responses for question no. 1 (Awareness of teeth to be replaced).



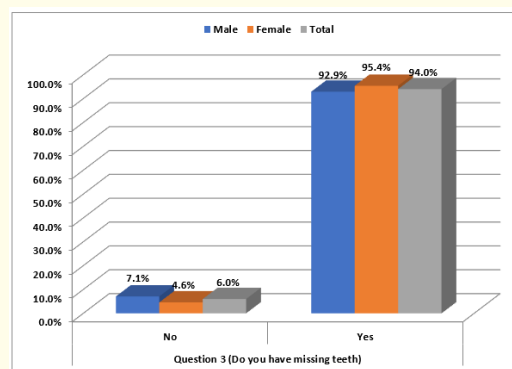
**Graph A:** General distribution of study population according to gender.



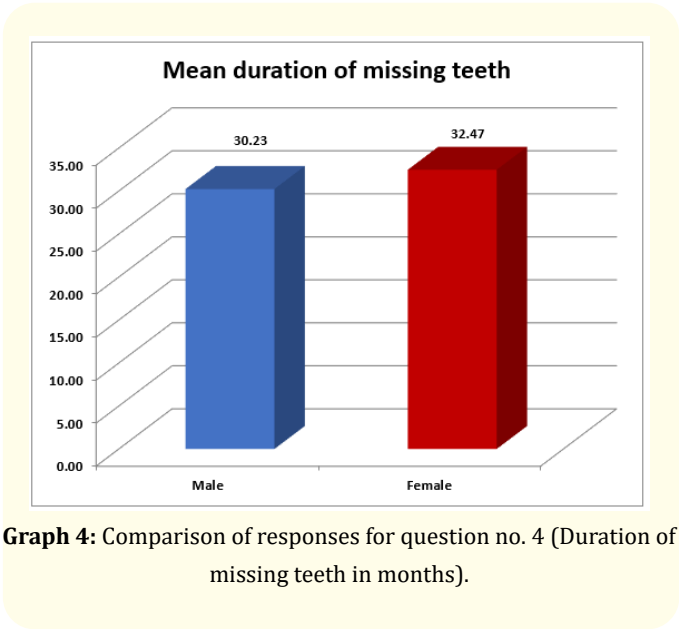
**Graph 2:** Distribution of comparison of responses for question no. 2 (Knowledge about the various prosthetic treatment options).



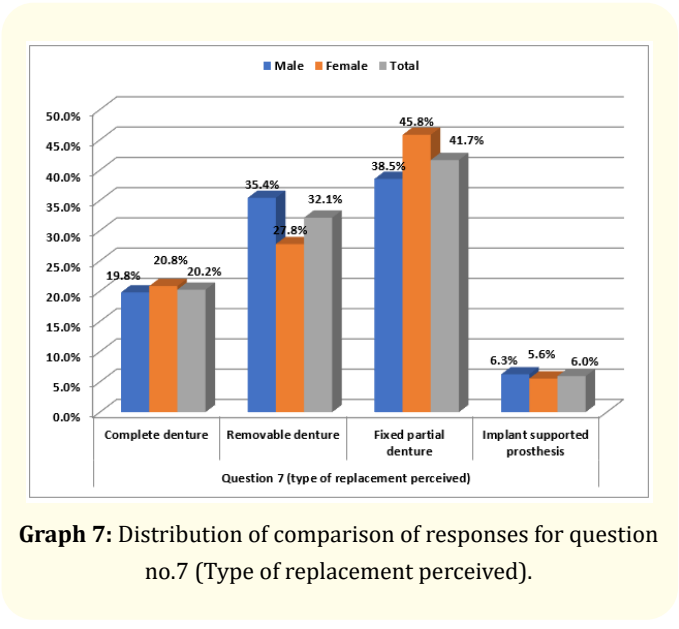
**Graph B:** General distribution of study population according to the different age groups.



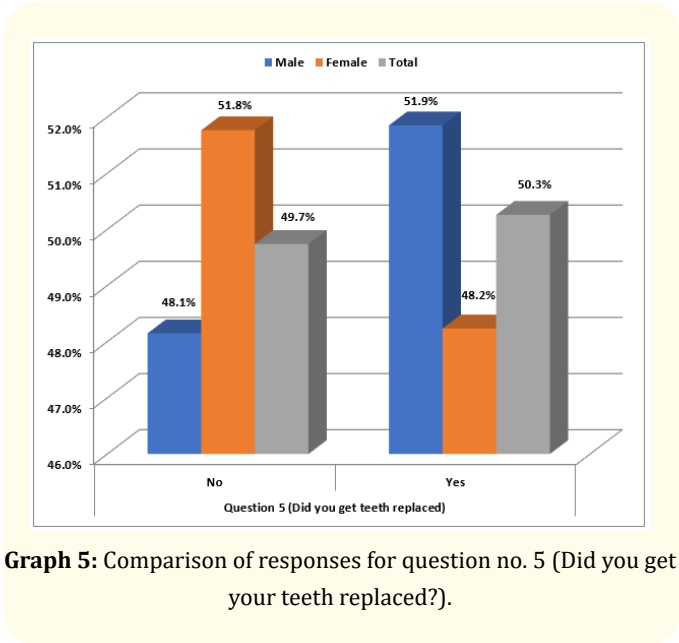
**Graph 3:** Distribution of comparison of responses for question no. 3 (Do you have any missing teeth?).



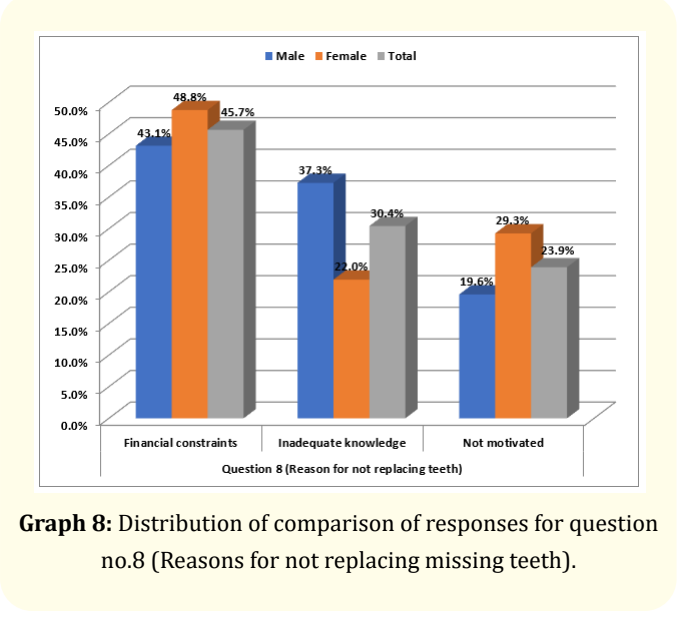
Graph 4: Comparison of responses for question no. 4 (Duration of missing teeth in months).



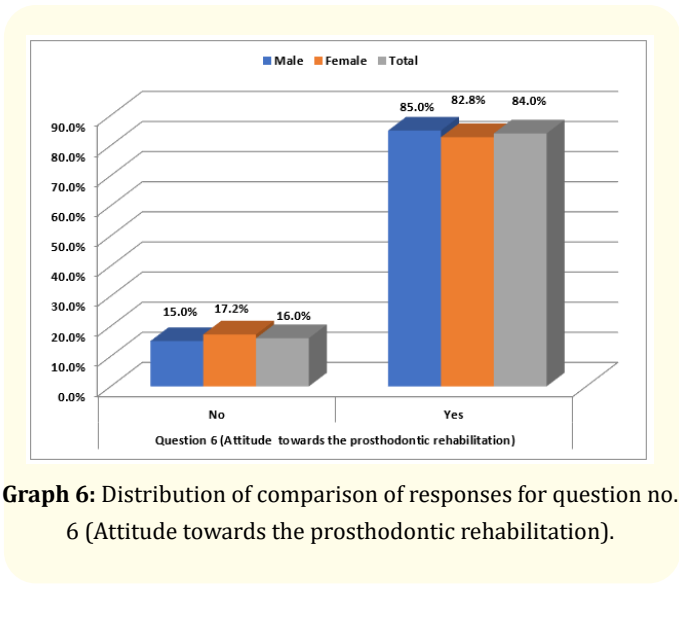
Graph 7: Distribution of comparison of responses for question no.7 (Type of replacement perceived).



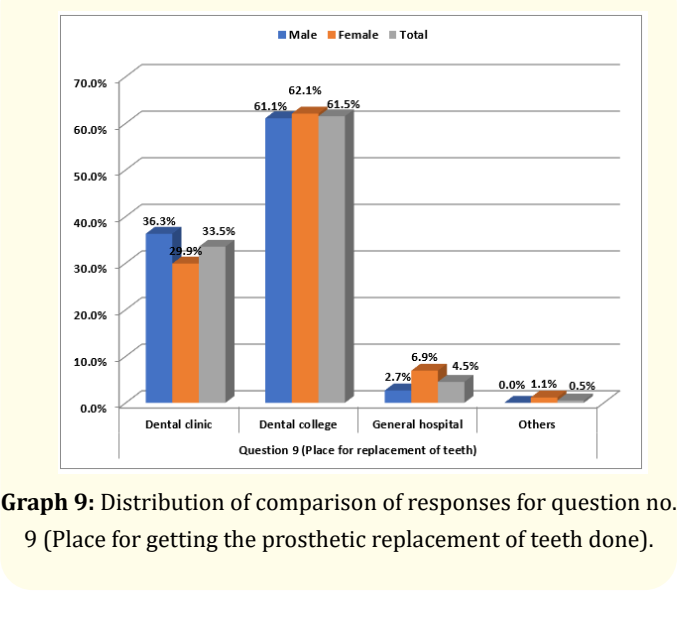
Graph 5: Comparison of responses for question no. 5 (Did you get your teeth replaced?).



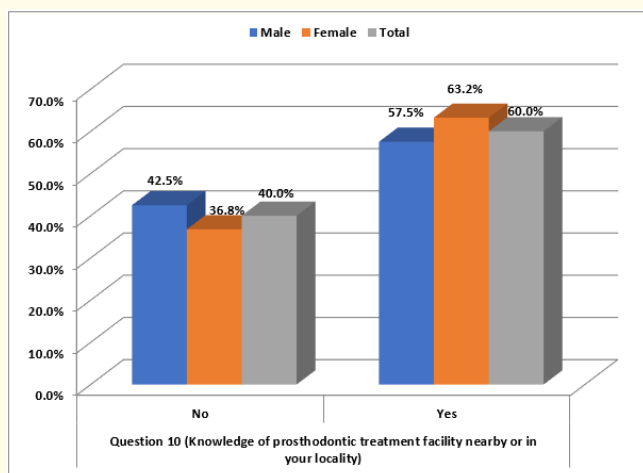
Graph 8: Distribution of comparison of responses for question no.8 (Reasons for not replacing missing teeth).



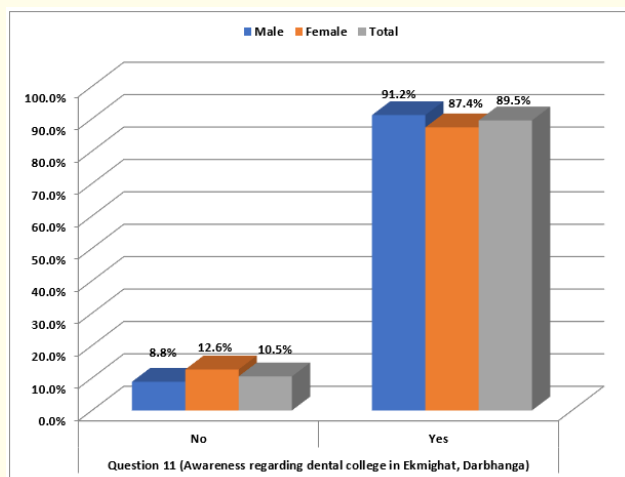
Graph 6: Distribution of comparison of responses for question no. 6 (Attitude towards the prosthodontic rehabilitation).



Graph 9: Distribution of comparison of responses for question no. 9 (Place for getting the prosthetic replacement of teeth done).



**Graph 10:** Comparison of responses for question no. 10 (Knowledge of prosthodontic treatment facility nearby or in your locality).



**Graph 11:** Distribution of comparison of responses for question no. 11 (Awareness about the availability of Prosthetic replacement treatment in Dental College in Ekmighat, Darbhanga).

## Discussion

For the all round development of an individual, good dental health proves to be an important segment. Very often, significance of oral health has been sighted as important tool in maintaining general health and wellbeing of patient. Various forms and function

of oral musculature are performed with the help of teeth to lead a comfortable life like mastication, phonetics, esthetics etc. Loss of teeth results in both physical and psychological trauma to an individual along with deterioration of other functions. So, it is very important to investigate patient's awareness and attitude towards the dental prosthesis for rehabilitation of missing teeth.

Data regarding the awareness and knowledge regarding the prosthodontic treatments among particular population is a key indicator about the attitude and approach of patients towards the prosthodontic treatments. This data is invaluable because it helps us to prepare a strategy to tackle the problems of lack of dental facilities, awareness and the drive to undergo prosthodontic treatments. Therefore, several studies are being conducted in different parts of the world.

Epidemiological data on knowledge and attitude towards the prosthetic replacement or rehabilitation of lost teeth among the Mithilanchal population, Bihar was lacking. Therefore, it was necessary to find out the attitude towards the replacement of teeth among the patients reporting to Mithila Minority Dental College and Hospital, Bihar. 200 patients reported for the study, out of which 56.5% (113) were males and 43.5% (87) were females.

In the present study, most of the patients belong to the younger age groups like 25 - 35 years and 36 - 45 years age groups. There were fewer patients in the middle- aged groups and older-aged groups like 46 - 55 years (9.5%) and 56 - 65 years (4.5%) and above 65 years (1%). Older people seem to be negligent regarding dental facilities and their use in their lives. Whereas, younger people seem to be more concerned and aware of dental treatments. Lack of information, transport problems, debilitating diseases and misconception about the value of dental care can be attributed to contributing factors for the apparent disinterest in dental care among the geriatric patients. Pellegdara and Ekanayke [20] in their study have concluded that changed perception associated with increased age such as feeling of being too old to adapt dentures and artificial teeth and lack of aesthetics can be contributing factor in unwillingness to restore lost teeth at an old age.

In the current study, 85.5% of subjects were known of the need for the replacement of teeth and 14% were totally unaware of the same. This Shows, that overall there is greater awareness regarding the need for the teeth to be replaced among the population. Most of them stated that improvement in chewing efficiency was the main

aim of restoring teeth. The increased awareness can be attributed to different audio-visual media, friends and relatives.

From this study, it can be remarked that the patients were well informed of the needs of complete dentures [5]. This may be attributed to increase in technology, media which enabled them to have knowledge about the dentures. Most of them were aware of the functions from complete denture treatment like mastication, esthetics and phonetics. In this sample population, there were very few people who were aware of the implant supported prostheses (24.5%). One important contributing factor could be lower standards of health and education in this particular region as compared to other regions.

Attitude point of view of the subjects, in the existing study showed that 84.0% had the constructive attitude towards substitution of missing teeth and towards the prosthodontic rehabilitation. Statistically, male and females were found to be equal. This was similar to the result obtained by Nirmal Raj., *et al.* [3] who have declared in their survey that the participants had the profound understanding about needs for substitution of teeth and wanted to get their teeth replaced.

However, when asked about the treatment preferred for replacement of teeth, majority of people preferred fixed partial denture (41.7%) as the mode of replacement as compared to other mode of prosthesis because of the better chewing ability, speech and esthetics. Fixed dental prosthesis was opted by many due to its superior function and esthetics. They felt that removable partial/complete dentures are generally not stable in the mouth and tend to move either way or outside on chewing food. The maintenance of good hygiene of dentures and cleanliness of dentures were the big problems for them and they were reluctant to do so which might be due to lack of information regarding chemical denture cleansers, denture cleansing pellets as well as lack of availability of such denture cleansers in local market. Only 6.0% preferred implant retained prosthesis as mode of replacement because they considered implant placement costlier and time-consuming procedure while fixed partial denture as economical and less invasive approach. A study done by Al-Quran., *et al.* (2011), also confirms the above findings.

So, the need of the hour is to make them aware of the importance of implant supported prosthesis by conducting free camps,

reducing the cost of implants. Dentists must spend more time to make such patients aware about the advantages and future benefits of implants and their prosthesis.

A survey was done in Saudi Arabia where due to duration time consumed, a majority of the sample preferred removable partial denture in comparison to fixed partial denture. This was opposite of what expected.

In the current study the subjects were assessed for the reasons for not replacing the missing teeth. It is confirmed from the study that financial constraints (45.7%) was a major issue in pursuing the prosthesis by the patients which was similar to the survey performed by Nirmal., *et al.* [3] and opposite to the survey done in Saudi Arabia by R. Naveen Reddy., *et al.* [37] which pointed inadequate knowledge as the probable reason of the negative attitude/unwillingness towards the replacement of teeth. So, invariably, high cost services is marked as constant hindrance, So, it's a high time to ensure the availability of dental services at more reasonable rates.

Lack of awareness of different prosthodontic treatment option among people living in rural village prevents them from availing of treatment even though there are many government set ups that offer treatment free of cost (Menezes M and Aras M, 2009) media need to come together and join hand in hands together to spread awareness regarding various such awareness programmes. One such scheme is Danta Bhagya scheme in Karnataka which provides free dentures and treatment to those aged 58 and above belonging to the BPL category. Similarly, Dental camps and prosthodontic out search programmes are possible solutions to change attitudes, spread awareness and extend treatment. It is recommended that the location of missing teeth need to be considered as a priority when educating patients on the most appropriate prosthetic treatment options.

Most of the patients opted to get treated from the dental college (61.5%) than private clinics. The probable cause behind it may be to reduce the financial burden following a prosthetic replacement as because the cost of prosthesis in dental clinic are very much higher as compared to dental college which is nearly unbearable for the low-socio economic group people. These findings were similar to the observations in literature by Nirmal Raj., *et al* [3]. It indicates that in developing countries there is an immense need to ensure the availability of dental services at reasonable rates. Simi-

larly, many studies found that high cost was the main constraint as shown by the studies of Saha A., *et al*, Kaurani P., *et al*. and Tepper, *et al*.

There are a few limitations of the study namely limited sample size and the study was performed in an institutional set-up where prosthetic treatment charges are different as compared to private dental care centers.

Last but not the least, future studies on this topic should determine how the dental profession and society might address an increased demand for dental services among the people who have limited financial resources. Those studies would provide important insights into the various types of assistance and insurance programs that might be designed and implemented to benefit older adults.

Lack of awareness about the importance of oral health and the consequences of neglect appear to constitute a barrier in using dental health care services. Therefore, the general public should also be made aware of free dental treatment facilities available in the health care centers and dental institutions and hospitals.

Dentists have a very major role in convincing patients to perceive their clinical needs instead of their desires alone. So, health professionals have a profound role to play in the supervision of local community by guiding them in the right direction undertaking their needs and demands of given oral conditions. Most patients reported that they had reserved money for health care, which may have been for general health rather than oral health because in India dental health insurance is not very common. In India, overall health insurance coverage is low; less than 10 percent of the population is estimated to have access to health insurance. For the most part, the health care demands of the rural poor. Several initiatives and experiments have been tried. The Rashtrapati Swasthya Bima Yojna and The Mukhyamantri Swasthya Bima Yojna of Chhattisgarh Government provide medical and dental facilities by providing financial insurance to the poor.

Dental professionals should promote oral health care in rural areas by conducting health awareness programs on consequences of edentulousness, importance of retaining, replacing and maintenance of teeth. Various educational and motivational programs should be organized to increase the prosthodontic awareness

among the masses and the results need to be evaluated time to time before and after programs. This is because education enlightens one's mind and enhances knowledge about the maintenance and requirements of oral health and its related diseases.

## Summary

The purpose of the present study was to evaluate the level of knowledge, attitude and behaviour of a group of population towards the prosthodontic rehabilitation and towards the options available for replacing missing teeth and factors preventing them from taking treatment among the Mithilanchal population, Bihar.

The Present study is a cross-sectional questionnaire-based survey which was conducted at Mithila Minority Dental College and Hospital, Darbhanga and the surrounding areas. The study involved sample population consisting of 200 subjects (113 males, 87 females) of age-group more than 25 years in which the participants were either partially edentulous or completely edentulous. A self-designed questionnaire containing eleven questions was designed on knowledge and awareness for different Prosthodontic treatment modalities and reasons for choosing or refusing treatments were measured.

The dentist, dental technicians, and assistants were excluded from the study. Descriptive statistical analysis has been performed in the present study. Results were obtained by calculating mean and standard deviation for the continuous variables. Categorical variables were presented as absolute numbers and percentage. The software used for the statistical analysis was SPSS (statistical package for social sciences) version 25.0 and Med Calc software. The statistical tests used in the study were independent t- test, chi squared test. The p-value was taken significant when less than 0.05 ( $p < 0.05$ ) and confidence interval of 95% was taken.

From the present study, it is clearly understood that there is a greater awareness regarding the need for replacement of teeth in the study population. However, majority of them were keen on getting teeth replaced mainly for comfortable mastication. Many of the patients opted fixed partial denture as mode of replacing teeth owing to its better chewing ability, esthetics, comfort. While the removable prosthodontic options are known to most of the patients, their awareness on tooth replacement with implant supported prosthesis is at low level. Even though the patients are aware of the treatments, the primary reason for them to not avail the treatment



is financial constraint and lack of facilities in near proximity. Hence, a distinct need exist for dental surgeon to be able to understand a patient's motivation in seeking prosthodontic care and to identify problems before starting treatment. Dentist's involvement in educating patients on prosthetic options needs to be improved.

Below mentioned steps should be considered to increase knowledge, attitude of patients towards prosthodontic treatments:

1. Dental health awareness programmes and prosthodontic outreach programs are possible solutions to change attitudes, spread awareness, and extend treatment.
2. Further research and developmental programmes need to be taken into account to reduce the cost of treatment of dental facilities.
3. Government sponsored treatment programmes (like Danta Bhagya yojana scheme) need to be implemented and promoted at larger scale to make the treatment facilities accessible for the socio economically weaker people also.
4. Dental health insurance schemes need to be implemented in India, so that many people can avail the benefits and get their treatment done.

## Conclusion

The present survey was intended to evaluate the patient's knowledge, attitude towards the prosthodontic rehabilitation among the Mithilanchal population. The study comprised of 200 subjects reporting to the Department of Prosthodontics and crown and bridge, Mithila Minority Dental College and Hospital, Darbhanga, Bihar. A self designed questionnaire containing eleven questions was used to collect data and deriving results from statistical analysis by using various statistical tests. The present results obtained from the survey may serve as a baseline for the future evaluation of attitudes towards the replacement of teeth.

Following noteworthy points can be revealed from the current study:

- The study showed that most of the subjects (85.5%) had the awareness of teeth to be replaced with the different prosthetic options.

- Within the limitation of the study, it can be concluded that fixed prosthesis was preferred over removable prosthesis as a medium of teeth replacement.
- Patients did not wanted implants as the mode of replacement of teeth.
- The current study depicted that even though the majority of the participants had the information about the need for the replacement of teeth (85.5%), they did not agreed to get treatment mainly due to financial restriction.
- It can be concluded from the present study that in developing countries like India there is an urgent need to certify the availability of dental services at cost effective charges because most of the patients opted to get treatment from the dental college (61.5%) rather than private clinics.
- Awareness regarding the free dental treatment facilities in the health care centers and dental institutions and hospitals should be done to general public. Dental professionals should also come forward and join in hands to conduct different health awareness programmes.

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