

Prevalence of dental attrition in *in vitro* fertilization children of West Bengal

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ABSTRACT

CONTEXT: Dental attrition is one of the problems affecting the tooth structure. It may affect both *in vitro* fertilization (IVF) and spontaneously conceived children. **AIMS:** This study was aimed to evaluate and to compare the prevalence of dental attrition in deciduous dentition of IVF and spontaneously conceived children. **SETTINGS AND DESIGN:** In a cross-sectional case control study dental attrition status of 3-5 years old children were assessed. The case group consisted of term, singleton babies who were the outcome of IVF in the studied area in 2009. **SUBJECTS AND METHODS:** The control group consisted of term, first child, singleton and spontaneously conceived 3-5 years old children who were also resident of the studied area. A sample of 153 IVF and 153 spontaneously conceived children was examined according to Hansson and Nilner classification. **STATISTICAL ANALYSIS USED:** Statistical analysis was carried out using Chi-square tests (χ^2) or Z test. **RESULTS:** No statistically significant difference found in studied (IVF children) and control group (spontaneously conceived children). **CONCLUSIONS:** IVF children are considered same as spontaneously conceived children when studied in relation to dental attrition status.

KEY WORDS: Deciduous dentition, dental attrition, *in vitro* fertilization children, prevalence

INTRODUCTION

The history of *in vitro* fertilization (IVF) and embryo transfer dates back as early as the 1890s when Walter Heape, a professor and physician at the University of Cambridge, England, who had been conducting research on reproduction in a number of animal species, reported the first known case of embryo transplantation in rabbits.

The first ever IVF birth occurred in Oldham, England on July 25, 1978. This birth was the result of the collaborative work of Dr. Patrick Steptoe and Dr. Robert Edwards.^[1] On 3rd October the birth of world's 2nd test tube baby named Durga was born as a result of team work done by Dr. Subhas Mukherjee and Dr. Saroj Bhattacharya^[2] in Kolkata, West Bengal.

Dental attrition is the loss of tooth structure by mechanical forces from opposing teeth. Attrition initially affects the enamel and may proceed to the underlying dentin also. As dentin is softer in consistency attrition

quickly affects the underlying dentin. Attrition usually starts on the incisal or occlusal surfaces. Salient characteristic feature of dental attrition is the development of a facet - flat surface with circumscribed and well-defined border. Facets of the opposing tooth will match perfectly in occlusion.

Since, there has been no study on attrition status of the deciduous dentition in IVF children of the studied area it was decided to conduct a cross-sectional study in that area to investigate the prevalence and severity of incisal and occlusal tooth wear among IVF children of the studied area, in order to evaluate the changes in the oral health due to IVF and compare the data with spontaneously conceived children of the same age group to provide a baseline data aids for future studies.

MATERIALS AND METHODS

This was a descriptive, analytic, cross sectional study approved by the Ethical Committee of Guru Nanak Institute of

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Dental Science and Research. Dental attrition status of 3-5 years old children were evaluated. The children in both case and control groups based on the route of pregnancy were enrolled for the entire course of study. The case group consisted of term (gestational age = 37-42 weeks), singleton babies whom were outcomes of IVF of the studied area and were chosen by a computer generated random number list. The control group consisted of term, first child, singleton and spontaneously conceived 3-5 years old children whom were referred to the department of pedodontics and preventive dentistry for the primary dental health check-up. Case and control matched for the year of birth, area of residence, parity, gestational age, maternal weight, maternal age and socio-economic status. Neonatal medical records of the case and control groups were reviewed and variables such sex, gestational age, birth weight and length, route of delivery, maternal age and parity were recorded. Multiple pregnancies, severe asphyxia, children with major congenital malformations, chromosomal abnormalities genetic syndromes and children with heavily caries teeth were excluded from the sample. To obviate error due to inter observer variations all measurements were made by a trained single examiner who was not informed about the birth status of the children.

The study was conducted after informed consent was obtained from the concerned authorities and guardians of children. A total of 734 parents of studied samples were approached to participate in the present study. Out of the above total sample, the parents of 153 IVF and 153 spontaneously agreed to participate in the present study. After informed consents were collected from the parents, all children were examined for dental attrition using a sterile mouth mirror and probe under adequate illumination. The severity of attrition was determined according to Hansson and Nilner^[3] and Nilner and Lassing classification:^[4]

- 0 = No wear
- 1 = wear of enamel only
- 2 = one or more teeth worn into dentine
- 3 = one or more teeth worn up to 1/3 of the crown
- 4 = extensive wear of one or more teeth more than 1/3 of the crown.

Prior to starting the procedure, the armamentarium was sterilized with the help of autoclaving unit. Obtained data was statically analyzed. For comparison of proportions Z test was used.

RESULTS

Totally 153 IVF children and 153 spontaneously conceived children were studied. Among 153 IVF children 81 (52.94%) were male and 72 (47.05%) were female. Among spontaneously conceived children 85 (55.55%) were male and 68 (44.44%)

were female [Table 1]. IVF children and spontaneously conceived children were again divided into three sub groups of 3 years, 4 years and 5 years. In each subgroup 51 children were selected for the study [Tables 2 and 3].

When comparing Tables 4 and 5, Score 0 - The Z-Score is - 0.1189. The $P = 0.90448$. The result is not significant at $P < 0.05$. Score 1 - The Z-Score is 0.1148. The $P = 0.9124$. The result is not significant at $P < 0.05$. Score 2 - The Z-Score is 0. The $P = 1$. The result is not significant at $P < 0.05$. Score 3 - The Z-Score is 0.2496. The $P = 0.80258$. The result is not significant at $P < 0.05$. Score 4 - The Z-Score is - 0.3071. The $P = 0.75656$. The result is not significant at $P < 0.05$.

When comparing Tables 6 and 7, Score 0 - The Z-Score is -0.8323. The $P = 0.40654$. The result is not significant at $P < 0.05$. Score 1 - The Z-Score is 0.1147. The $P = 0.9124$. The result is not significant at $P < 0.05$. Score 2 - The Z-Score is 1.0435. The $P = 0.29834$. The result is not significant at $P < 0.05$. Score 3 - The Z-Score is 0.2369. The $P = 0.81034$. The result is not significant at $P < 0.05$. Score 4 - The Z-Score is 0. The $P = 1$. The result is not significant at $P < 0.05$.

When comparing Tables 8 and 9, Score 0 - The Z-Score is -0.851. The $P = 0.39532$. The result is not significant at $P < 0.05$. Score 1 - The Z-Score is -0.2293. The $P = 0.8181$. The result is not significant at $P < 0.05$. Score 2 - The Z-Score is 1.4577. The $P = 0.1443$. The result is not significant at $P < 0.05$. Score 3 - The Z-Score is 0.5472. The $P = 0.58232$. The result is not significant at $P < 0.05$. Score 4 - The Z-Score is 0.3383. The $P = 0.72786$. The result is not significant at $P < 0.05$.

Table 1 : Sex-wise distribution of *in vitro* fertilization children and spontaneously conceived children

| Type of delivery | Male (%) | Female (%) | Total (%) |
|----------------------------------|-------------|-------------|-----------|
| IVF children | 81 (52.94) | 72 (47.05) | 153 (100) |
| Spontaneously conceived children | 85 (55.55) | 68 (44.44) | 153 (100) |
| Total | 178 (58.16) | 122 (39.86) | 306 (100) |

IVF=*in vitro* fertilization

Table 2: Distribution of *in vitro* fertilization children according to age and sex

| Sex | 3 Year | | 4 Year | | 5 Year | | Total | |
|--------|--------|-------|--------|-------|--------|-------|-------|-------|
| | No. | % | No. | % | No. | % | No. | % |
| Male | 26 | 50.98 | 27 | 52.94 | 28 | 54.90 | 81 | 52.94 |
| Female | 25 | 49.01 | 24 | 47.05 | 23 | 45.09 | 72 | 47.05 |
| Total | 51 | | 51 | | 51 | | 153 | |

Table 3: Distribution of spontaneously conceived children according to age and sex

| Sex | 3 Year | | 4 Year | | 5 Year | | Total | |
|--------|--------|-------|--------|-------|--------|-------|-------|-------|
| | No. | % | No. | % | No. | % | No. | % |
| Male | 27 | 52.94 | 31 | 60.78 | 27 | 52.94 | 85 | 55.55 |
| Female | 24 | 47.05 | 20 | 39.21 | 24 | 47.05 | 68 | 44.44 |
| Total | 51 | | 51 | | 51 | | 153 | |

Table 4: Distribution of attrition of maxillary incisors of *in vitro* fertilization children of West Bengal

| Age Score | 3 years | | | | | | 4 years | | | | | | 5 years | | | | | | Grand total | |
|-----------|---------|-------|--------|----|-------|-------|---------|-------|--------|-------|-------|-------|---------|-------|--------|-------|-------|-------|-------------|-------|
| | Male | | Female | | Total | | Male | | Female | | Total | | Male | | Female | | Total | | No. | % |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | | | |
| 0 | 13 | 50 | 11 | 44 | 24 | 47.05 | 12 | 44.44 | 8 | 33.33 | 20 | 39.21 | 6 | 21.42 | 5 | 21.73 | 11 | 21.56 | 55 | 35.94 |
| 1 | 10 | 38.46 | 12 | 48 | 22 | 43.13 | 11 | 40.74 | 11 | 45.83 | 22 | 43.13 | 14 | 50 | 12 | 52.17 | 26 | 50.98 | 70 | 45.75 |
| 2 | 2 | 7.69 | 1 | 4 | 3 | 5.88 | 2 | 7.40 | 2 | 8.33 | 4 | 7.84 | 4 | 14.28 | 3 | 13.04 | 7 | 13.72 | 14 | 9.15 |
| 3 | 1 | 3.86 | 1 | 4 | 2 | 3.92 | 1 | 3.70 | 2 | 8.33 | 3 | 5.88 | 2 | 7.14 | 2 | 8.69 | 4 | 7.84 | 9 | 5.88 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 2 | 7.14 | 1 | 4.34 | 3 | 5.88 | 5 | 3.26 |
| Total | 25 | | 25 | | 51 | | 27 | | 24 | | 51 | | 28 | | 23 | | 51 | | 153 | |

Table 5: Distribution of attrition of maxillary incisors of spontaneously conceived children of West Bengal

| Age Score | 3 years | | | | | | 4 years | | | | | | 5 years | | | | | | Grand total | |
|-----------|---------|-------|--------|-------|-------|-------|---------|-------|--------|----|-------|-------|---------|-------|--------|------|-------|-------|-------------|-------|
| | Male | | Female | | Total | | Male | | Female | | Total | | Male | | Female | | Total | | No. | % |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | | | |
| 0 | 13 | 48.14 | 11 | 45.83 | 24 | 47.05 | 12 | 38.70 | 8 | 40 | 20 | 39.21 | 6 | 22.22 | 6 | 25 | 12 | 23.52 | 56 | 36.60 |
| 1 | 10 | 37.03 | 11 | 45.83 | 21 | 41.17 | 14 | 45.16 | 9 | 45 | 23 | 45.09 | 13 | 48.14 | 12 | 50 | 25 | 49.01 | 69 | 45.09 |
| 2 | 2 | 7.40 | 1 | 41.6 | 3 | 5.88 | 3 | 9.67 | 1 | 5 | 4 | 7.84 | 4 | 14.81 | 3 | 12.5 | 7 | 13.72 | 14 | 9.15 |
| 3 | 1 | 3.70 | 1 | 41.6 | 2 | 3.92 | 1 | 3.22 | 1 | 5 | 2 | 3.92 | 2 | 7.40 | 2 | 8.33 | 4 | 7.84 | 8 | 5.22 |
| 4 | 1 | 3.70 | 0 | 0 | 1 | 1.96 | 1 | 3.22 | 1 | 5 | 2 | 3.92 | 2 | 7.40 | 1 | 4.16 | 3 | 5.88 | 6 | 3.92 |
| Total | 27 | | 24 | | 51 | | 31 | | 20 | | 51 | | 27 | | 24 | | 51 | | 153 | |

Table 6: Distribution of attrition of mandibular incisors *in vitro* fertilization children of West Bengal

| Age Score | 3 years | | | | | | 4 years | | | | | | 5 years | | | | | | Grand total | |
|-----------|---------|-------|--------|----|-------|-------|---------|-------|--------|-------|-------|-------|---------|-------|--------|-------|-------|-------|-------------|-------|
| | Male | | Female | | Total | | Male | | Female | | Total | | Male | | Female | | Total | | No. | % |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | | | |
| 0 | 11 | 42.30 | 10 | 40 | 21 | 41.17 | 10 | 37.03 | 9 | 37.5 | 19 | 37.25 | 8 | 28.57 | 4 | 17.39 | 12 | 23.52 | 52 | 33.98 |
| 1 | 12 | 46.15 | 13 | 52 | 25 | 49.01 | 11 | 40.74 | 10 | 41.66 | 21 | 41.17 | 12 | 42.85 | 13 | 56.52 | 25 | 49.01 | 71 | 46.40 |
| 2 | 2 | 7.69 | 1 | 4 | 3 | 5.88 | 3 | 11.11 | 3 | 12.5 | 6 | 11.76 | 3 | 10.71 | 3 | 13.04 | 6 | 11.76 | 15 | 9.80 |
| 3 | 1 | 3.84 | 1 | 4 | 2 | 3.92 | 2 | 7.40 | 1 | 4.16 | 3 | 5.88 | 3 | 10.71 | 2 | 8.69 | 5 | 9.80 | 10 | 6.53 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 2 | 7.14 | 1 | 4.34 | 3 | 5.88 | 5 | 3.26 |
| Total | 26 | | 25 | | 51 | | 27 | | 24 | | 51 | | 28 | | 23 | | 51 | | 153 | |

Table 7: Distribution of attrition of mandibular incisors of spontaneously conceived children of West Bengal

| Age Score | 3 years | | | | | | 4 years | | | | | | 5 years | | | | | | Grand total | |
|-----------|---------|-------|--------|-------|-------|-------|---------|-------|--------|----|-------|-------|---------|-------|--------|-------|-------|-------|-------------|-------|
| | Male | | Female | | Total | | Male | | Female | | Total | | Male | | Female | | Total | | No. | % |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | | | |
| 0 | 12 | 44.44 | 10 | 41.66 | 22 | 43.13 | 13 | 41.93 | 9 | 45 | 22 | 43.13 | 8 | 29.62 | 7 | 29.16 | 15 | 29.41 | 59 | 38.56 |
| 1 | 12 | 44.44 | 12 | 50 | 24 | 47.05 | 13 | 41.93 | 9 | 45 | 22 | 43.13 | 12 | 44.44 | 12 | 50 | 24 | 47.05 | 70 | 45.75 |
| 2 | 1 | 3.70 | 1 | 41.6 | 2 | 3.92 | 2 | 6.45 | 1 | 5 | 3 | 5.88 | 3 | 11.11 | 2 | 8.33 | 5 | 9.80 | 10 | 6.53 |
| 3 | 1 | 3.70 | 1 | 41.6 | 2 | 3.92 | 2 | 6.45 | 1 | 5 | 3 | 5.88 | 2 | 7.40 | 2 | 8.33 | 4 | 7.84 | 9 | 5.88 |
| 4 | 1 | 3.70 | 0 | 0 | 1 | 1.96 | 1 | 3.22 | 0 | 0 | 1 | 1.95 | 2 | 7.40 | 1 | 4.16 | 3 | 5.88 | 5 | 3.26 |
| Total | 27 | | 24 | | 51 | | 31 | | 20 | | 51 | | 27 | | 24 | | 51 | | 153 | |

Table 8: Distribution of attrition of maxillary canine *in vitro* fertilization children of West Bengal

| Age Score | 3 years | | | | | | 4 years | | | | | | 5 years | | | | | | Grand total | |
|-----------|---------|-------|--------|----|-------|-------|---------|-------|--------|-------|-------|-------|---------|-------|--------|-------|-------|-------|-------------|-------|
| | Male | | Female | | Total | | Male | | Female | | Total | | Male | | Female | | Total | | No. | % |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | | | |
| 0 | 10 | 38.46 | 9 | 36 | 19 | 37.25 | 8 | 29.62 | 8 | 33.33 | 16 | 31.37 | 8 | 28.57 | 4 | 17.39 | 12 | 23.52 | 47 | 30.71 |
| 1 | 14 | 53.84 | 14 | 56 | 28 | 54.90 | 13 | 48.14 | 12 | 50 | 25 | 49.01 | 14 | 50 | 14 | 60.86 | 28 | 54.90 | 81 | 52.94 |
| 2 | 1 | 3.84 | 1 | 4 | 2 | 3.92 | 3 | 11.11 | 2 | 8.33 | 5 | 9.80 | 3 | 10.71 | 2 | 8.69 | 5 | 9.80 | 12 | 7.84 |
| 3 | 1 | 3.84 | 1 | 4 | 2 | 3.92 | 2 | 7.40 | 1 | 4.16 | 3 | 5.88 | 1 | 3.57 | 2 | 8.69 | 3 | 5.88 | 8 | 5.22 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 2 | 7.14 | 1 | 8.34 | 3 | 5.88 | 5 | 3.26 |
| Total | 26 | | 25 | | 51 | | 27 | | 24 | | 51 | | 28 | | 23 | | 51 | | 153 | |

When comparing Tables 10 and 11, Score 0 - The Z-Score is -0.4713. The $P = 0.63836$. The result is not significant at $P < 0.05$. Score 1 - The Z-Score is 0.1153. The $P = 0.90448$. The result is not significant at $P < 0.05$. Score 2 - The Z-Score is 0.2834. The $P = 0.77948$. The result is not significant at $P < 0.05$. Score 3 - The Z-Score is 0.5802. The $P = 0.56192$. The result is not significant at $P < 0.05$. Score 4 - The Z-Score is 1.0016. The $P = 0.31732$. The result is not significant at $P < 0.05$.

When comparing Tables 12 and 13, Score 0 - The Z-Score is -0.2261. The $P = 0.8181$. The result is not significant at

$P < 0.05$. Score 1 - The Z-Score is 0.4859. The $P = 0.62414$. The result is not significant at $P < 0.05$. Score 2 - The Z-Score is -0.5802. The $P = 0.56192$. The result is not significant at $P < 0.05$. Score 3 and 4 - The Z-Score is NaN. The $P = 0$.

When comparing Tables 14 and 15, Score 0 - The Z-Score is 0.8505. The $P = 0.39532$. The result is not significant at $P < 0.05$. Score 1 - The Z-Score is -0.9252. The $P = 0.35238$. The result is not significant at $P < 0.05$. Score 2 - The Z-Score is 0. The $P = 1$. The result is not significant at $P < 0.05$. Score 3 and 4 - The Z-Score is NaN. The $P = 0$.

Table 9: Distribution of attrition of maxillary canine of spontaneously conceived children of West Bengal

| Age Score | 3 years | | | | | | 4 years | | | | | | 5 years | | | | | | Grand total | |
|--------------|---------|-------|--------|-------|-------|-------|---------|-------|--------|----|-------|-------|---------|-------|--------|-------|-------|-------|-------------|-------|
| | Male | | Female | | Total | | Male | | Female | | Total | | Male | | Female | | Total | | No. | % |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | | | |
| 0 | 11 | 40.74 | 9 | 37.5 | 20 | 39.21 | 12 | 38.70 | 7 | 35 | 19 | 37.25 | 8 | 29.62 | 7 | 29.16 | 15 | 29.41 | 54 | 35.29 |
| 1 | 13 | 48.14 | 13 | 54.16 | 25 | 50.98 | 16 | 51.61 | 11 | 55 | 27 | 52.94 | 16 | 59.25 | 14 | 58.33 | 30 | 58.82 | 83 | 54.24 |
| 2 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 1 | 3.22 | 1 | 5 | 2 | 3.92 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 6 | 3.92 |
| 3 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 1 | 3.22 | 1 | 5 | 2 | 3.92 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 6 | 3.92 |
| 4 | 1 | 3.70 | 0 | 0 | 1 | 1.96 | 1 | 3.22 | 0 | 0 | 1 | 1.96 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 4 | 2.61 |
| Total | 27 | | 24 | | 51 | | 31 | | 20 | | 51 | | 27 | | 24 | | 51 | | 153 | |

Table 10: Distribution of attrition of mandibular canine in vitro fertilization children of West Bengal

| Age Score | 3 years | | | | | | 4 years | | | | | | 5 years | | | | | | Grand Total | |
|--------------|---------|-------|--------|----|-------|-------|---------|-------|--------|-------|-------|-------|---------|-------|--------|-------|-------|-------|-------------|-------|
| | Male | | Female | | Total | | Male | | Female | | Total | | Male | | Female | | Total | | No. | % |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | | | |
| 0 | 11 | 42.30 | 10 | 40 | 21 | 41.17 | 10 | 37.03 | 9 | 37.5 | 19 | 37.25 | 10 | 35.71 | 6 | 26.08 | 16 | 31.37 | 56 | 36.60 |
| 1 | 14 | 53.84 | 13 | 52 | 27 | 52.94 | 16 | 59.25 | 14 | 58.33 | 30 | 58.82 | 16 | 57.14 | 14 | 60.86 | 30 | 58.82 | 87 | 56.86 |
| 2 | 1 | 3.84 | 1 | 4 | 2 | 3.92 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 2 | 7.14 | 1 | 4.34 | 3 | 5.88 | 7 | 4.57 |
| 3 | 0 | 0 | 1 | 4 | 1 | 1.96 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.34 | 1 | 1.96 | 2 | 1.30 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.34 | 1 | 1.96 | 1 | 0.65 |
| Total | 26 | | 25 | | 51 | | 27 | | 24 | | 51 | | 28 | | 23 | | 51 | | 153 | |

Table 11: Distribution of attrition of mandibular canine of spontaneously conceived children of West Bengal

| Age Score | 3 years | | | | | | 4 years | | | | | | 5 years | | | | | | Grand total | |
|--------------|---------|-------|--------|-------|-------|-------|---------|-------|--------|----|-------|-------|---------|-------|--------|-------|-------|-------|-------------|-------|
| | Male | | Female | | Total | | Male | | Female | | Total | | Male | | Female | | Total | | No. | % |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | | | |
| 0 | 11 | 40.74 | 10 | 41.66 | 21 | 41.17 | 14 | 45.16 | 7 | 35 | 21 | 41.17 | 10 | 37.03 | 8 | 33.33 | 18 | 35.29 | 60 | 39.21 |
| 1 | 15 | 55.55 | 13 | 54.16 | 28 | 54.90 | 16 | 51.61 | 12 | 60 | 28 | 54.90 | 16 | 59.25 | 14 | 58.33 | 30 | 58.82 | 86 | 56.20 |
| 2 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 1 | 3.22 | 1 | 5 | 2 | 3.92 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 6 | 3.92 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.16 | 1 | 1.96 | 1 | 0.65 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 27 | | 24 | | 51 | | 31 | | 20 | | 51 | | 27 | | 24 | | 51 | | 153 | |

Table 12: Distribution of attrition of maxillary molars in vitro fertilization children of West Bengal

| Age Score | 3 years | | | | | | 4 years | | | | | | 5 years | | | | | | Grand total | |
|--------------|---------|-------|--------|----|-------|-------|---------|-------|--------|-------|-------|-------|---------|-------|--------|-------|-------|-------|-------------|-------|
| | Male | | Female | | Total | | Male | | Female | | Total | | Male | | Female | | Total | | No. | % |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | | | |
| 0 | 24 | 92.30 | 24 | 96 | 48 | 94.11 | 25 | 92.59 | 22 | 91.66 | 47 | 92.15 | 26 | 92.85 | 21 | 91.30 | 47 | 92.15 | 142 | 92.81 |
| 1 | 2 | 7.69 | 1 | 4 | 3 | 5.88 | 2 | 7.40 | 2 | 8.33 | 4 | 7.84 | 1 | 3.57 | 2 | 8.69 | 3 | 5.88 | 10 | 6.53 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.57 | 0 | 0 | 1 | 1.96 | 1 | 0.65 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 26 | | 25 | | 51 | | 27 | | 24 | | 51 | | 28 | | 23 | | 51 | | 153 | |

Table 13: Distribution of attrition of the maxillary molar of spontaneously conceived children of West Bengal

| Age Score | 3 years | | | | | | 4 years | | | | | | 5 years | | | | | | Grand total | |
|-----------|---------|-------|--------|-------|-------|-------|---------|-------|--------|----|-------|-------|---------|-------|--------|-------|-------|-------|-------------|-------|
| | Male | | Female | | Total | | Male | | Female | | Total | | Male | | Female | | Total | | No. | % |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | | | |
| 0 | 26 | 96.29 | 23 | 95.83 | 49 | 96.07 | 29 | 98.54 | 19 | 95 | 48 | 94.11 | 24 | 88.88 | 22 | 91.66 | 46 | 90.19 | 143 | 93.46 |
| 1 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 2 | 6.45 | 1 | 5 | 3 | 5.88 | 2 | 7.40 | 1 | 4.16 | 3 | 5.88 | 8 | 5.22 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 2 | 1.30 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 27 | | 24 | | 51 | | 31 | | 20 | | 51 | | 27 | | 24 | | 51 | | 153 | |

Table 14: Distribution of attrition of mandibular molars in vitro fertilization children of West Bengal

| Age Score | 3 years | | | | | | 4 years | | | | | | 5 years | | | | | | Grand total | |
|-----------|---------|-------|--------|------|-------|-------|---------|-------|--------|-------|-------|-------|---------|-------|--------|-------|-------|-------|-------------|-------|
| | Male | | Female | | Total | | Male | | Female | | Total | | Male | | Female | | Total | | No. | % |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | | | |
| 0 | 25 | 96.15 | 24 | 96.0 | 49 | 96.07 | 25 | 92.59 | 22 | 91.66 | 47 | 92.15 | 26 | 92.85 | 21 | 91.30 | 47 | 92.15 | 143 | 93.46 |
| 1 | 1 | 3.84 | 1 | 4.0 | 2 | 3.92 | 2 | 7.40 | 2 | 8.33 | 4 | 7.84 | 1 | 3.57 | 1 | 43.4 | 2 | 3.92 | 8 | 5.22 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.57 | 1 | 43.4 | 2 | 3.92 | 2 | 1.30 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 26 | | 25 | | 51 | | 27 | | 24 | | 51 | | 28 | | 23 | | 51 | | 153 | |

Table 15: Distribution of attrition of mandibular molar of spontaneously conceived children of West Bengal

| Age Score | 3 years | | | | | | 4 years | | | | | | 5 years | | | | | | Grand total | |
|-----------|---------|-------|--------|-------|-------|-------|---------|-------|--------|------|-------|-------|---------|-------|--------|-------|-------|-------|-------------|-------|
| | Male | | Female | | Total | | Male | | Female | | Total | | Male | | Female | | Total | | No. | % |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | | | |
| 0 | 25 | 92.59 | 23 | 95.83 | 48 | 94.11 | 28 | 90.32 | 18 | 90.0 | 45 | 90.19 | 23 | 85.18 | 22 | 91.66 | 45 | 88.23 | 139 | 90.94 |
| 1 | 2 | 7.40 | 1 | 4.16 | 3 | 5.88 | 3 | 9.67 | 2 | 10.0 | 5 | 9.80 | 3 | 11.11 | 1 | 4.16 | 4 | 7.84 | 12 | 7.84 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.70 | 1 | 4.16 | 2 | 3.92 | 2 | 1.30 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 27 | | 24 | | 51 | | 31 | | 20 | | 51 | | 27 | | 24 | | 51 | | 153 | |

DISCUSSION

Tooth attrition is defined as gradual and regular loss of tooth substance as a result of natural mastication.^[5] Incisal and occlusal tooth wear have been studied in several epidemiologic and clinical investigations. Many factors may cause dental attrition such as masticatory habit and parafunctions.^[6,7] Dietary factors,^[8] digestive disturbance and industrial environmental factors,^[9] are also responsible for tooth wear. The composition of saliva may also be an important factor.^[10] Researchers expressed that the higher prevalence of incisal or occlusal wear of any degree on the primary teeth observed in the 5-year-olds compared with the 3-year-old is probably related to the longer exposure time for tooth wear.^[11]

Some researchers studied tooth wear on primary teeth and on the first permanent molars in primitive and urbanized Greenland natives. They found that the degree of incisal or occlusal wear decreased with increasing urbanization. When comparing-incisal wear decreased with increasing

urbanization.^[12] When comparing - incisal or occlusal wear of deciduous teeth in skeletal material of children, less severe tooth wear in Scottish medieval children than in a contemporary group of English children.^[13]

Teeth wear patterns reported in deciduous dentition in Belgian children was 41% in the incisors and 21% in the molars.^[14] In our study, 55 IVF children and 56 spontaneously conceived children had no attrition of the maxillary incisors. The percentage total is 35.94 and 36.60. There is a no significant proportion found between IVF children spontaneously conceived children in and respect to all subgroups.

Teeth wear pattern in American children was documented as 83.4%. Attrition in maxillary teeth was higher. Regarding maxillary incisors it was found that 35.94% IVF children and 36.60% spontaneously conceived children had Score 0, 45.75% and 45.09% had Score 1, 9.15% and 9.15% had Score 2 and only 5.88% and 5.22% had Score 3, 3.26% and 3.92% had Score 4. Regarding mandibular

incisors it was found that 33.94% IVF children and 38.56% spontaneously conceived children had Score 0, 46.40% and 45.75% had Score 1, 9.80% and 6.53% had Score 2 and only 6.53% and 5.88% had Score 3, 3.26% had Score 4. In North American children,^[14] in Swedish population^[11] and in Cambridge preschool children^[15] found near similar result. No previous study was found involving IVF children in this field. Hence, no comparison was possible with the previous study. More studies are required in this arena.

Coming on to, maxillary canines, it was found that 30.71% IVF children and 35.29% spontaneously conceived children had Score 0, 52.94% and 54.24% had Score 1, 7.84% and 3.92% had Score 2 and only 5.22% and 3.92% had Score 3, 3.26% and 2.61 had Score 4. No previous study was found involving IVF children in this field. So no comparison was possible with the previous study.

Coming on to, mandibular canines, it was found that 36.60% IVF children and 39.21% spontaneously conceived children had Score 0, 56.86% and 56.20% had Score 0, 4.57% and 3.92% had Score 2 and only 1.30% and 0.65% had Score 3, 0.65% and 0 had Score 4. No previous study was found involving IVF children in this field. So no comparison was possible with the previous study.

In a study on Israeli preschool children canine attrition was highly associated with straight terminal pattern molar relation.^[16] Coming on to, maxillary molars it was found that 92.81% IVF children and 93.46% spontaneously conceived children had Score 0, 6.53% and 5.22% had Score 1, 0.65% and 1.30% had Score 2 and no cases had Score 3 and Score 4. No previous study was found involving IVF children in this field. So no comparison was possible with the previous study.

Coming on to, mandibular molars it was found that 93.46% IVF children and 90.84% spontaneously conceived children had Score 0, 5.22% and 7.84% had Score 1, 1.30% and 1.30% had Score 2 and no cases had Score 3 and Score 4. No previous study was found involving IVF children in this field. So no comparison was possible with the previous study.

No forward movement or physiological shift of the mandibular arch occurs during the functional period of deciduous dentition between 3 and 6 years. Researchers expressed attrition is an environmental process and not a physiological phenomenon.^[17] Hence, one researcher considered forward movement of all the mandibular deciduous teeth in relation to maxillae is necessary for establishment correct jaw relation. He considered the attrition of canine cusp to be important

for forward growth of the mandible. Thus, attrition was considered an essentially normal feature in the primary dentition.^[18] A clear relationship was found between tooth wear in children and the consumption of fruit-based drinks, especially at bedtime.^[19] So proper dietary advice may be needed.

CONCLUSION

In this study IVF children expressing similar kind of dental attrition pattern as like spontaneously conceived children. This study invites further scope for cross sectional and longitudinal study for the researcher. Hopefully this kind of study will bring positive assurance to numerous parents of IVF children.

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