

# A Pilot Study on Effectiveness of Computer Assisted Teaching on Knowledge of Fathers on Rearing of their Toddler in Selected Areas of Dadra and Nagar Haveli

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**Abstract:** *The study aimed to assess the effectiveness of computer-assisted teaching on fathers' knowledge regarding toddler rearing, employing a quasi-experimental design. A non-probability convenience sampling technique was utilized, with 60 fathers allocated to both the experimental and control groups. Structured knowledge questionnaires were employed for data collection. The results revealed a significant enhancement in the knowledge level of fathers in the experimental group, indicating the effectiveness of computer-assisted teaching in improving fathers' understanding of toddler rearing.*

**Keywords:** Fathers, computer assisted teaching, Knowledge, rearing

## 1. Introduction

Children are invaluable treasures, ushered into this world as the most precious assets contributing significantly to the national human resource of any country.<sup>1</sup> In the contemporary, rapidly evolving society, families are adopting a nuclear structure, with mothers actively pursuing professional careers and engaging in demanding jobs. Given the increasing involvement of mothers in work beyond the home, the active participation of fathers in childcare has become essential. Consequently, the duty of nurturing and raising children has expanded to encompass both parents.<sup>2</sup>

Growing evidence highlights the positive impact of fathers on their children's development and well-being. Longitudinal data from the past decade emphasize that paternal involvement, spanning from the prenatal stage through a child's lifetime, contributes to psychosocial and behavioral development. This influence is often distinct from and complements maternal involvement. It is crucial to clarify the term "father" in discussions about their role, acknowledging changing family structures. According to the AAP guideline, a father is broadly defined as "the male or males most involved in caregiving and committed to the child's well-being," encompassing biological fathers, foster fathers, stepfathers, and grandfathers, irrespective of living situation, marital status, or biological relation.<sup>3</sup>

Data indicate that early involvement of fathers in their children's lives is a significant predictor of sustained engagement over time. The strongest predictor of fathers' involvement by the age of 5 years is their prenatal engagement, coupled with cohabitation with the mother.<sup>4</sup>

## 2. Review Literature

A supporting study was conducted to evaluate fathers' knowledge, attitudes, and practices related to childcare for children under five in the Ram Nagar area, Belagavi. Using a pretested questionnaire and SPSS software, a community-

based cross-sectional analysis revealed that the majority (52%) had good knowledge, 80.5% held positive attitudes, and 45.5% demonstrated poor childcare practices. Significant differences in knowledge and attitude were associated with age, socio-economic status, and education ( $P < 0.05$ ). In conclusion, while most fathers exhibited good knowledge and positive attitudes, there was a notable gap in hands-on childcare practices.<sup>1</sup>

Another study was done on exploring fathers' roles in child care in Madagascar, utilized qualitative methods. Ten focus group discussions (seven with mothers, three with fathers) and eight in-depth interviews with key informants were conducted. The thematic analysis revealed that fathers were perceived to contribute through financial and material support, as well as teaching and playing with their children. However, practical involvement was limited to playing and holding the child in the mother's absence due to busy schedules and work-related separation. Traditional gender roles, emphasizing the mother's primary responsibility for childcare, were prominent, leading to criticism of men engaged in childcare. Despite community resistance, both mothers and fathers expressed interest in increased paternal involvement. The study suggests that successful interventions should target shifting community perceptions on parental responsibilities.<sup>5</sup>

## 3. Methodology

A preliminary investigation was undertaken to evaluate fathers' knowledge regarding toddler rearing in selected areas of Dadra and Nagar Haveli. The research employed a quantitative approach, utilizing a quasi-experimental control group design. A non-probability Convenience sampling was applied to select 30 fathers in the control group and 30 fathers in the experimental group at two distinct settings. A set of 30 structured knowledge questionnaires was administered, gathering demographic information from all participants.

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The study followed a sequential process, initiating with a pre-test for both groups. The experimental group underwent computer-assisted teaching on toddler rearing practices, while the control group received no such intervention. A post-test was administered to both groups after a 15-day interval. Descriptive statistics, including frequency percentages for sociodemographic data, and mean and standard deviation for knowledge scores, were employed.

Additionally, an independent t-test was conducted to assess the effectiveness of computer-assisted teaching. Non-parametric Chi-square tests were utilized to explore associations between pre-test knowledge scores and demographic variables.

4. Results

Table 1: Socio-demographic data, N=30+30(60)

Demographic variable	Control group		Experimental group	
	Frequency	Percentage	Frequency	Percentage
Age of the father				
21-25	13	43.3	11	36.7
26-30	5	16.7	8	26.7
31-35	5	16.7	7	23.3
36 and above	7	23.3	4	13.3
Age of the toddler				
13-18m	15	50.0	8	26.7
19-24m	7	23.3	10	33.3
25-30m	4	13.3	7	23.3
31-36m	4	13.3	5	16.7
Gender of the toddler				
male	11	36.7	17	56.7
female	19	63.3	13	43.3
Educational status of father				
Primary	6	20.0	1	3.3
Secondary	3	10.0	7	23.3
PU	9	30.0	6	20.0
Diploma	5	16.7	8	26.7
Degree	7	23.3	4	13.3
Occupational status of the father				
Unemployed	2	6.7	1	3.3
Unskilled	9	30.0	7	23.3
Semi skilled	3	10.0	8	26.7
Skilled	5	16.7	4	13.3
Semi-professional	9	30.0	9	30.0
Professional	2	6.7	1	3.3
Marital status				
Married	24	80.0	23	76.7
Live in	6	20.0	7	23.3
Number of toddlers already reared				
Nil	4	13.3	7	23.3
1	10	33.3	15	50.0
2	11	36.7	6	20.0
3 or more	5	16.7	2	6.7
Monthly family income				
Below 5000	2	6.7	1	3.3
5001-10000	7	23.3	10	33.3
10001-30000	15	50.0	15	50.0
30001-50000	6	20.0	4	13.3
Religion				
Hindu	21	70.0	17	56.7
Muslim	6	20.0	10	33.3
Christian	1	3.3	2	6.7
Others	2	6.7	1	3.3
Area of Residence				
Rural	26	86.7	22	73.3
Urban	4	13.3	8	26.7

Table 2: Level of Knowledge in Pre-test, N=60

Level of Knowledge	Control group		Experimental group	
	Frequency	Percentage	Frequency	Percentage
Poor knowledge	5	16.7	3	10.0
Average knowledge	25	83.3	27	90.0
Good knowledge	0	0	0	0
Total	30	100.0	30	100.0

The table presents the distribution of knowledge levels within the control and experimental groups. Here are the interpretations:

In Control Group: 16.7% of fathers in the control group demonstrated poor knowledge, the majority, 83.3%, had

average knowledge. In experimental group, where 10.0% of fathers in the experimental group had poor knowledge, the majority, 90.0%, exhibited average knowledge. These interpretations provide insights into the distribution of knowledge levels among fathers in the control and experimental groups, emphasizing the prevalence of average knowledge and the impact of the experimental intervention on reducing the percentage of fathers with poor knowledge.

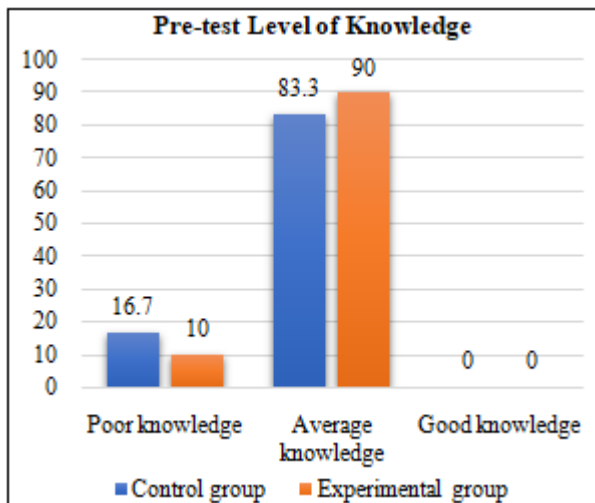


Figure 1: Pre-test Level of Knowledge

Table 2: Level of Knowledge in Post-test, N=60

Level of Knowledge	Control group		Experimental group	
	Frequency	Percentage	Frequency	Percentage
Poor knowledge	3	10.0	0	0
Average knowledge	27	90.0	4	13.3
Good knowledge	0	0	26	86.7
Total	30	100	30	100.0

The table illustrates the distribution of knowledge levels within the control and experimental groups. Here are the interpretations:

In control group, 10.0% of fathers in the control group demonstrated poor knowledge. The majority, 90.0%, had average knowledge. In experimental group, none of the fathers in exhibited poor knowledge, 13.3% of fathers had average knowledge and the majority, 86.7%, reached the "good knowledge" level.

These interpretations emphasize the improvement in knowledge levels among fathers in the experimental group, particularly in achieving a "good knowledge" status, highlighting the efficacy of the experimental intervention

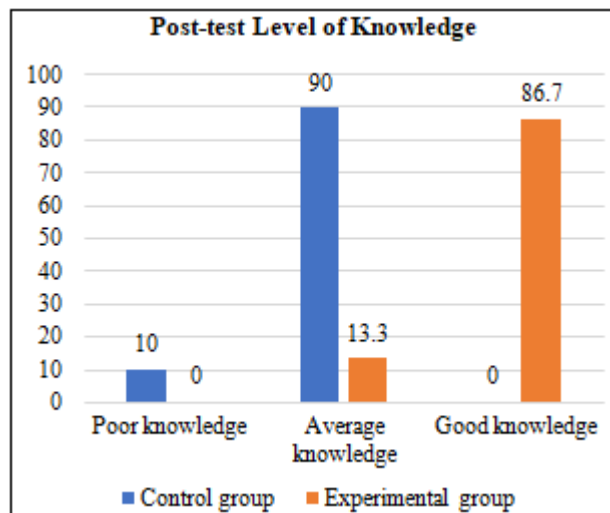


Figure 2: Post-test Level of Knowledge

Table 3: Mean, Median, Standard deviation and Range, N=60

	Control group		Experimental group	
	Pre-test	Post-test	Pre-test	Post-test
Mean	12.37	13.50	13.30	22.93
Median	13.00	14.00	14.00	23.00
SD	1.810	2.113	1.745	2.016
Range	7 -15	9-17	9-15	20-27

The table presents pre-test and post-test scores for both the control and experimental groups, including measures of central tendency (mean, median) and variability (standard deviation, range). Here are the interpretations:

In control group, the average score on the knowledge test before the intervention was 12.37 and after the intervention, the average score increased to 13.50. The spread of scores was moderate, with an SD of 1.810 in the pre-test and 2.113 in the post-test and the range of scores increased from 7-15 in the pre-test to 9-17 in the post-test.

In experimental group, the average score on the knowledge test before the intervention was 13.30. After the intervention, the average score substantially increased to 22.93. The spread of scores was moderate, with an SD of 1.745 in the pre-test and 2.016 in the post-test. The range of scores increased from 9-15 in the pre-test to 20-27 in the post-test.

These interpretations suggest that the computer-assisted teaching intervention had a more pronounced effect on knowledge improvement in the experimental group compared to the control group.

Table 5: Effectiveness of Computer assisted teaching, N=60

	t value	df	P value
Significance between Level of Pre-test Knowledge between Experimental and Control group	2.034	58	0.047
Significance between Level of Post-test Knowledge between Experimental and Control group	17.691	58	0.000

The t-test for pre-test knowledge between the experimental and control groups yielded a t-value of 2.034 with 58 degrees of freedom. The associated p-value is 0.047. With a p-value below the conventional significance level of 0.05, there is evidence to suggest a statistically significant difference in pre-test knowledge levels between the experimental and control groups. The t-test for post-test knowledge between the experimental and control groups yielded a t-value of 17.691 with 58 degrees of freedom. The associated p-value is 0.000. The extremely low p-value indicates a highly significant difference in post-test knowledge levels between the experimental and control groups.

The analysis of the association between demographic data and pre-test knowledge scores reveals interesting patterns. The majority of fathers in the 21-25 age group, with toddlers aged 13-18 months, and those with a male toddler, exhibit average knowledge. However, fathers with toddlers aged 25-30 months, those with secondary education, and those in urban areas tend to show a mix of average and poor knowledge. Unemployed and professional fathers, married fathers, and those with no toddlers generally display average knowledge, while fathers in live-in relationships and those rearing one toddler exhibit a mix of average and poor knowledge. These findings provide insights into how demographic factors may be correlated with the pre-test knowledge scores of fathers.

## 5. Conclusion

The pilot study employed a comprehensive research design, blending quantitative methods and statistical analyses to investigate the impact of computer-assisted teaching on fathers' knowledge of toddler rearing in Dadra and Nagar Haveli.

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