

## *Knowledge Attitude and Awareness towards Brainstorming Technique among Undergraduate Dental Students in Khammam City*

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### **ABSTRACT**

Brainstorming is a group-based technique used to generate a wide range of ideas and solutions to a specific problem or challenge. It involves free-thinking, spontaneity, and a focus on quantity over quality, where participants are encouraged to think freely and generate as many ideas as possible without worrying about their feasibility or practicality. The technique fosters collaboration and teamwork, encouraging participants to build on and expand each other's ideas to create new and innovative solutions. By using brainstorming, teams, and organizations can tap into the collective creativity and knowledge of their members to generate innovative solutions and drive success.

The process typically involves defining the problem, generating and collecting ideas, and evaluating and prioritizing them. Overall, brainstorming is a useful technique for encouraging creative thinking, solving complex problems, and identifying innovative solutions and opportunities. brainstorming is a group-based technique used to generate a wide range of ideas and solutions to a specific problem or challenge.

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**Aim:** To generate a wide range of creative and innovative ideas or solutions to a specific problem, challenge, or opportunity.

#### **Objective**

1. Generate a wide range of ideas: Brainstorming aims to produce as many ideas as possible without worrying about their feasibility or practicality.
2. Encourage creative thinking: Brainstorming stimulates creative thinking and helps participants think outside the box.
3. Foster collaboration and teamwork: Brainstorming brings people together, encouraging them to share ideas and build on each other's thoughts.
4. Solve complex problems: Brainstorming helps teams tackle complex problems and challenges by generating innovative solutions.

**Identify innovative solutions and opportunities:** Brainstorming aims to uncover new and innovative solutions, products, services, or processes.

**Method:** A cross-sectional survey was conducted among 210 dental students, comprising 50 males (27.69%) and 160 females (72.31%), including 73 38 second-year BDS students, 51 third-year BDS students, 54 final-year BDS students, and 67 interns. The survey included 16 questions exploring Knowledge, attitude, and

awareness towards the brainstorming technique among undergraduate dental students in Khammam city. Responses were analysed based on gender and year of study using a chi-square test, p value to identify statistical significant difference.

**Keywords:** Creativity, Collaboration, Communication, Innovation, Idea generation, Free-thinking, Quantity over quality, Spontaneity.

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#### Introduction

Brainstorming is a powerful and widely used creative problem-solving technique that involves generating a wide range of ideas in a short period of time. It is a group-based technique that encourages active participation, creativity, and imagination. The term "brainstorming" was first coined by Alex F. Osborn, an American advertising executive, in the 1950s.

**Definition:** Brainstorming is a structured technique for producing a large number of ideas in a short time, with the goal of finding innovative solutions to problems or challenges.

**Purpose:** The primary purpose of brainstorming is to stimulate creative thinking, encourage idea generation, and develop innovative solutions to complex problems.

**Key Characteristics:** Brainstorming is characterized by:

- **Free-thinking and spontaneity.**
- **Quantity over quality.**
- **No criticism or judgment.**
- **Building on each other's ideas.**
- **Encouraging wild and creative ideas.**

**Applications:** Brainstorming can be applied in various fields, including business, education, healthcare, and social services, to:

- Solve complex problems.
- Generate new ideas and solutions.
- Improve communication and teamwork.
- Enhance creativity and innovation.
- Develop strategic plans and goals.

#### Methodology

- Study design and area:** A cross sectional study was carried out at tertiary care teaching hospital Khammam.
- Study population:** The health care students including those of I year, II year, III year, IV year and Interns who responded to the offline paper print questionnaire survey.
- Study Instrument:** A self-administered questionnaire was designed based on knowledge attitude and awareness on brainstorming technique had total 16 questions .Each participant has to fill their demographic data like Name, age, and year of study. Participant has to select one option from the answers provided against questions. The questions were based on knowledge attitude and awareness among dental students.
- Pilot study:** A pilot study was conducted on a group of students to assess the validity and reliability of study.
- Sampling method:** The sampling method used is the convenience method.
- Inclusion criteria:** The students who were interested in study and who are willing to participate.
- Exclusion criteria:** Students who are not willing to participate are excluded.
- Organizing the study:** The study was designed in a paper-based version of the self-administered questionnaire of 16 questions focusing on knowledge, attitude, and practice.

**Includes the sections of demographic data:**

Name, Age, Sex and Year of study demographic information and asked to answer all questions by selecting one option from the provided answers.

**Statistical analysis:** Data from the filled questionnaire was conducted in a tabular form in an excel worksheet and evaluated for analysis. The analysis was performed by SSPS version 29.

**Result**

A total of 210 students took part in this with female (72.31%) and male of (27.69%). Age of the participants ranging from 19-25 years. In this study females were more likely to demonstrate awareness on brainstorming than females. Significantly Interns (31.90%) Final BDS (25.71%) III BDS (24.29%) II BDS (18.10%).

Age					
	No of Response	Maximum	Minimum	Mean	STD Deviation
AGE	210	28	19	22.44286	1.479727
Gender					
	Frequency	Percentage			
Male	50	27.69%			
Female	160	72.31%			
<b>Total</b>	<b>210</b>	<b>100.00%</b>			
Year of Study					
	Frequency	Percentage			
II BDS	38	18.10%			
III BDS	51	24.29%			
IV BDS	54	25.71%			
Interns	67	31.90%			
<b>Total</b>	<b>210</b>	<b>100.00%</b>			

**Distribution and comparison of responses based on gender**

Item	Response	Male		Female		Chi-square value	P-value
		n	%	n	%		
Q1	1	39	18.57%	139	66.19%	0.015	0.006
	2	7	3.33%	8	3.81%		
	3	2	0.95%	11	5.24%		
	4	2	0.95%	2	0.95%		
Q2	1	11	5.24%	14	6.67%	0.112	0.904
	2	34	16.19%	134	63.81%		
	3	3	1.43%	7	3.33%		
	4	2	0.95%	5	2.38%		
Q3	1	50	23.81%	160	76.19%	0.115	0.012
	2	0	0.00%	0	0.00%		
	3	0	0.00%	0	0.00%		
	4	0	0.00%	0	0.00%		
Q4	1	9	4.29%	19	9.05%	0.802	0.221
	2	5	2.38%	10	4.76%		
	3	4	1.90%	10	4.76%		
	4	32	15.24%	121	57.62%		
Q5	1	38	18.10%	138	65.71%	0.292	0.354

	2	5	2.38%	7	3.33%		
	3	4	1.90%	8	3.81%		
	4	3	1.43%	7	3.33%		
<b>Q6</b>	1	38	18.10%	136	64.76%	0.708	0.319
	2	5	2.38%	10	4.76%		
	3	4	1.90%	8	3.81%		
	4	3	1.43%	6	2.86%		
<b>Q7</b>	1	37	17.62%	140	66.67%	0.191	0.012
	2	5	2.38%	6	2.86%		
	3	5	2.38%	9	4.29%		
	4	3	1.43%	5	2.38%		
<b>Q8</b>	1	38	18.10%	138	65.71%	0.049	0.112
	2	4	1.90%	7	3.33%		
	3	5	2.38%	9	4.29%		
	4	3	1.43%	6	2.86%		
<b>Q9</b>	1	38	18.10%	139	66.19%	0.804	0.727
	2	4	1.90%	8	3.81%		
	3	4	1.90%	8	3.81%		
	4	4	1.90%	5	2.38%		
<b>Q10</b>	1	11	5.24%	19	9.05%	0.798	0.733
	2	5	2.38%	12	5.71%		
	3	4	1.90%	7	3.33%		
	4	30	14.29%	122	58.10%		
<b>Q11</b>	1	9	4.29%	18	8.57%	0.115	0.006
	2	4	1.90%	8	3.81%		
	3	5	2.38%	10	4.76%		
	4	32	15.24%	124	59.05%		
<b>Q12</b>	1	8	3.81%	11	5.24%	0.211	0.804
	2	5	2.38%	10	4.76%		
	3	6	2.86%	7	3.33%		
	4	31	14.76%	130	61.90%		
<b>Q13</b>	1	9	4.29%	17	8.10%	0.802	0.752
	2	32	15.24%	124	59.05%		
	3	5	2.38%	10	4.76%		
	4	4	1.90%	9	4.29%		
<b>Q14</b>	1	8	3.81%	17	8.10%	0.292	0.981
	2	5	2.38%	8	3.81%		
	3	4	1.90%	7	3.33%		
	4	33	15.71%	128	60.95%		
<b>Q15</b>	1	9	4.29%	14	6.67%	0.478	0.651
	2	3	1.43%	8	3.81%		
	3	5	2.38%	12	5.71%		
	4	33	15.71%	126	60.00%		
<b>Q16</b>	1	8	3.81%	13	6.19%	0.004	0.79
	2	3	1.43%	9	4.29%		
	3	5	2.38%	7	3.33%		

	4	34	16.19%	131	62.38%	
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P≤0.05 is statistically significant

**Distribution and comparison of responses based on year of study**

Item	Response	II BDS		III BDS		IV BDS		INTERN		Chi square value	P-value
		n	%	n	%	n	%	n	%		
Q1	1	31	14.76%	46	21.90%	40	19.05%	61	29.05%		
	2	2	0.95%	3	1.43%	5	2.38%	5	2.38%		
	3	3	1.43%	1	0.48%	8	3.81%	1	0.48%		
	4	2	0.95%	1	0.48%	1	0.48%	0	0.00%		
Q2	1	3	1.43%	3	1.43%	5	2.38%	14	6.67%		
	2	27	12.86%	45	21.43%	45	21.43%	51	24.29%		
	3	2	0.95%	2	0.95%	4	1.90%	2	0.95%		
	4	6	2.86%	1	0.48%	0	0.00%	0	0.00%		
Q3	1	38	18.10%	51	24.29%	54	25.71%	67	31.90%		
	2	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
	3	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
	4	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
Q4	1	7	3.33%	2	0.95%	5	2.38%	14	6.67%		
	2	3	1.43%	3	1.43%	7	3.33%	2	0.95%		
	3	5	2.38%	2	0.95%	4	1.90%	3	1.43%		
	4	23	10.95%	44	20.95%	38	18.10%	48	22.86%		
Q5	1	27	12.86%	43	20.48%	46	21.90%	60	28.57%		
	2	3	1.43%	2	0.95%	5	2.38%	2	0.95%		
	3	5	2.38%	3	1.43%	2	0.95%	2	0.95%		
	4	3	1.43%	3	1.43%	1	0.48%	3	1.43%		
Q6	1	26	12.38%	44	20.95%	42	20.00%	62	29.52%		
	2	4	1.90%	1	0.48%	7	3.33%	3	1.43%		
	3	4	1.90%	3	1.43%	3	1.43%	2	0.95%		
	4	4	1.90%	3	1.43%	2	0.95%	0	0.00%		
Q7	1	28	13.33%	44	20.95%	44	20.95%	61	29.05%		
	2	3	1.43%	1	0.48%	3	1.43%	4	1.90%		
	3	5	2.38%	3	1.43%	4	1.90%	2	0.95%		
	4	2	0.95%	3	1.43%	3	1.43%	0	0.00%		
Q8	1	27	12.86%	44	20.95%	43	20.48%	62	29.52%		
	2	2	0.95%	1	0.48%	5	2.38%	3	1.43%		
	3	6	2.86%	3	1.43%	3	1.43%	2	0.95%		
	4	3	1.43%	3	1.43%	3	1.43%	0	0.00%		
Q9	1	29	13.81%	43	20.48%	42	20.00%	63	30.00%		
	2	3	1.43%	1	0.48%	6	2.86%	2	0.95%		
	3	4	1.90%	3	1.43%	3	1.43%	2	0.95%		
	4	2	0.95%	4	1.90%	3	1.43%	0	0.00%		
Q10	1	5	2.38%	2	0.95%	6	2.86%	17	8.10%		
	2	5	2.38%	1	0.48%	8	3.81%	3	1.43%		
	3	3	1.43%	3	1.43%	3	1.43%	2	0.95%		

	4	25	11.90%	45	21.43%	37	17.62%	45	21.43%		
<b>Q11</b>	1	6	2.86%	2	0.95%	7	3.33%	12	5.71%		
	2	2	0.95%	1	0.48%	5	2.38%	4	1.90%		
	3	6	2.86%	1	0.48%	4	1.90%	2	0.95%		
	4	24	11.43%	45	21.43%	38	18.10%	49	23.33%		
<b>Q12</b>	1	5	2.38%	2	0.95%	2	0.95%	12	5.71%		
	2	4	1.90%	2	0.95%	5	2.38%	4	1.90%		
	3	4	1.90%	3	1.43%	4	1.90%	2	0.95%		
	4	25	11.90%	44	20.95%	43	20.48%	49	23.33%		
<b>Q13</b>	1	5	2.38%	2	0.95%	5	2.38%	14	6.67%		
	2	27	12.86%	42	20.00%	39	18.57%	48	22.86%		
	3	4	1.90%	3	1.43%	6	2.86%	2	0.95%		
	4	2	0.95%	4	1.90%	4	1.90%	3	1.43%		
<b>Q14</b>	1	8	3.81%	2	0.95%	3	1.43%	12	5.71%		
	2	3	1.43%	1	0.48%	5	2.38%	4	1.90%		
	3	2	0.95%	3	1.43%	4	1.90%	2	0.95%		
	4	25	11.90%	45	21.43%	42	20.00%	49	23.33%		
<b>Q15</b>	1	4	1.90%	2	0.95%	3	1.43%	14	6.67%		
	2	5	2.38%	1	0.48%	2	0.95%	3	1.43%		
	3	5	2.38%	3	1.43%	7	3.33%	2	0.95%		
	4	24	11.43%	45	21.43%	42	20.00%	48	22.86%		
<b>Q16</b>	1	4	1.90%	2	0.95%	3	1.43%	12	5.71%		
	2	3	1.43%	1	0.48%	5	2.38%	3	1.43%		
	3	4	1.90%	3	1.43%	2	0.95%	3	1.43%		
	4	27	12.86%	45	21.43%	44	20.95%	49	23.33%		

**P≤0.05 is statistically significant**

### Discussion

Brainstorming is a powerful and widely used creative problem-solving technique that involves generating a wide range of ideas in a short period of time. By encouraging free-thinking, spontaneity, and collaboration, brainstorming stimulates creative thinking, fosters teamwork, and generates innovative solutions. While brainstorming has its challenges and limitations, such as dominance by strong personalities and lack of focus, following best practices like setting clear goals, encouraging active participation, and using visual aids can help overcome these obstacles.

Brainstorming is a powerful and widely used creative problem-solving technique that involves generating a wide range of ideas in a short period of time. By encouraging free-thinking, spontaneity, and collaboration, brainstorming stimulates

creative thinking, fosters teamwork, and generates innovative solutions. While brainstorming has its challenges and limitations, such as dominance by strong personalities and lack of focus, following best practices like setting clear goals, encouraging active participation, and using visual aids can help overcome these obstacles.

### Conclusion

The findings of this study highlight the need for targeted educational interventions to enhance the knowledge and awareness of brainstorming techniques among undergraduate dental students. This can be achieved through the incorporation of brainstorming technique-related topics in the dental curriculum, conducting workshops and seminars, and providing access to reliable sources of information.

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