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Original Research

To assess influence of gratification behaviour on early childhood caries and body mass index in children

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ABSTRACT:

Background: Gratification is the emotional satisfaction of happiness in reciprocation to the accomplishment of a goal or desire. The present study was conducted to assess influence of gratification behaviour on early childhood caries and body mass index in children. **Materials & Methods:** The present study was conducted on 80 children age ranged 4- 10 years of both gender. Patients were divided into 2 groups of 40 each. Group I were ECC patients and group II were caries free. In each patient, BMI was calculated using the standard metric system formula for BMI according to CDC (Centers for disease control), i.e., $BMI = \text{weight in kg} / \text{height in m}^2$. In all patients, gratification response was recorded as delayed and instant. **Results:** In group I, delayed response was seen in 30 and in group II in 15, instant response was seen in 10 and 25 in group I and II respectively. The difference was significant ($P < 0.05$). In group I, 6 subjects with delayed response were at risk for overweight and 2 were at risk for obesity. In group II, 4 were at risk for overweight. The difference was significant ($P < 0.05$). **Conclusion:** Authors found that Children with ECC were more self-controlled, and children with high BMI were more impulsive.

Key words: impulsive, Gratification, Delayed

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INTRODUCTION

Gratification is the emotional satisfaction of happiness in reciprocation to the accomplishment of a goal or desire. Similar to all emotions, it is an incentive of behavior and plays a prime role in the entire range of human social systems. In psychological models, gratification is believed to be governed by "pleasure principle" which is primarily the motive power that compels human beings to gratify their wishes, needs, and urges. Delayed gratification or deferred gratification is a psychosocial ability that involves being able to resist the temptation for a smaller and more immediate reward to receive a larger and more enduring reward later.¹

World Health Organization (WHO) defines overweight and obesity as: 'abnormal or excessive fat accumulation in fatty tissues (adipose tissue mass) that may impair health'. Measuring fat and estimating its level in the body, when it

is likely to impair health, is a difficult task. With advancement of technologies, many techniques for measuring fat are available however for logistic reasons most of their use are limited to healthcare settings.² At population level estimations using body height and weight are most widely used. Most common is Quetelet index, better known as body mass index (BMI), which is body weight (kg) divided by height squared (m^2) – an estimate found to have high correlation with body fatness among adults however this fails to distinguish between lean body mass and fat especially among children. For instance at same BMI, percentage body fat for males and females are different.³ The present study was conducted to assess influence of gratification behaviour on early childhood caries and body mass index in children.

MATERIALS & METHODS

The present study was conducted in the department of Pedodontics. It comprised of 80 children age ranged 4- 10 years of both gender. Ethical clearance was obtained prior to the study. Consent was obtained from parents of all children before the procedure.

Information such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 40 each. Group I

were ECC patients and group II were caries free. In each patient, BMI was calculated using the standard metric system formula for BMI according to CDC (Centers for disease control), i.e., BMI = weight in kg/height in m². In all patients, gratification response was recorded as delayed and instant. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Caries	ECC patients	Cries free
Number	40	40

Table I shows that group I were ECC patient and group II were caries free patients.

Table II Gratification score in both groups

Groups	Group I	Group II	P value
Delayed	30	15	0.01
Instant	10	25	0.02

Table II shows that in group I, delayed response was seen in 30 and in group II in 15, instant response was seen in 10 and 25 in group I and II respectively. The difference was significant (P< 0.05).

Graph I: Gratification score in both groups

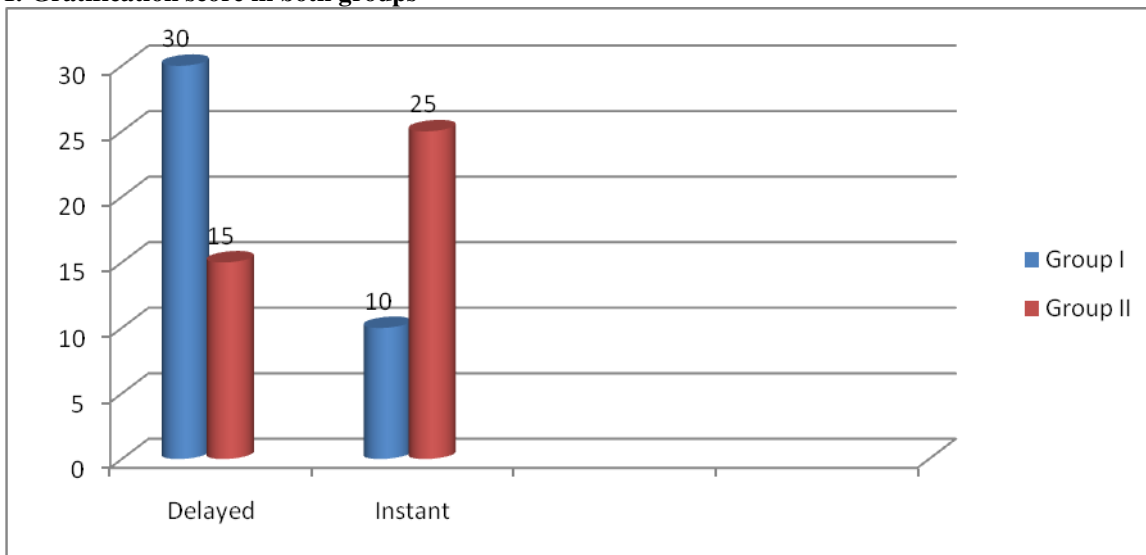


Table III : Distribution of sample according to their body mass index status and gratification response

IAP classification	Group I		Group II		P value
	Delayed	Instant	Delayed	Instant	
Underweight	0	1	2	3	0.01
Healthy	22	5	11	15	1
Risk for overweight	6	3	4	6	0.9
Risk for Obesity	2	1	0	1	0.01

Table III shows that in group I, 6 subjects with delayed response were at risk for overweight and 2 were at risk for obesity. In group II, 4 were at risk for overweight. The difference was significant (P< 0.05).

DISCUSSION

In children and adolescents, ascertaining obesity using BMI is complicated due to fluctuating body weight, height and body composition with time (increasing age) and gender.⁴ Therefore growth charts (normogram) for age and genders are commonly used. There is no internationally acceptable index to assess childhood obesity nor there is any established cut offs to define overweight or obesity. Growth charts are available from CDC and WHO with different indicators like: height for age, weight for age, weight for length, weight for height and BMI for age. BMI for age, though not a perfect measure of adiposity as it covaries with height, can be considered appropriate in the absence of another pragmatic measure to define body fat. Indian Association of Pediatrics (IAP) recommends specific growth charts for boys and girls prepared on Indian children between 5 to 18 years while for younger children it recommends the use of WHO growth charts.⁵ The present study was conducted to assess influence of gratification behaviour on early childhood caries and body mass index in children. In this study, group I were ECC patient and group II were caries free patients. In group I, delayed response was seen in 30 and in group II in 15, instant response was seen in 10 and 25 in group I and II respectively. A et al⁶ conducted a study aimed to ascertain the impact of delayed gratification as a behavioral risk factor for the occurrence of ECC and obesity in preschool children of age 5–6 years. Fifty children with ECC (Group I) and 50 caries-free children (Group II) were included to participate in a task similar to the famous Stanford marshmallow experiment to assess their ability to delay gratification. BMI was calculated by obtaining the biometric measures of height and weight. Body weight status was determined using BMI for age percentile growth charts revised by the Indian Academy of Pediatrics, 2015. Children's caries experience and BMI status were associated with their gratification response. Higher percentage of children with ECC delayed their gratification (54%) than caries free (40%). Children who exhibited instant gratification (37%) had a higher BMI when compared to those who delayed their gratification (25%). Children with ECC were more self-controlled, and children with high BMI were more impulsive. Hence, delayed gratification for cariogenic reward is a behavioral risk factor for ECC, whereas instant gratification is an alarming risk factor for higher BMI in preschool children. Childhood obesity has been interpreted as compulsive overeating under the influence of brain mediated through dopamine receptors. Children consume significantly more calories and products having invisible salt, sugar and fat products, with taste thresholds adapted/changing with time – depending upon the exposure, accessibility, availability and affordability of products in the market. In the past two to three decades: national prevalence of prevalence of overweight and obesity increased almost four times from 4% to 15%,¹⁶ while type 2 diabetes among Indian adults

23 increased from 5.9% to 9.1% and hypertension prevalence increased from 17.2% to 29.2%, with significant urban-rural differences.⁷

We found that in group I, 6 subjects with delayed response were at risk for overweight and 2 were at risk for obesity. In group II, 4 were at risk for overweight. The difference was significant ($P < 0.05$). The ability to delay gratification develops as children mature and learn to forgo less valued, short-term pleasures in favor of pursuing valued long-term goals.⁸ The past literature has linked the ability to delay gratification to other positive outcomes, including academic success, physical and psychological health, and social competence. A person's ability to defer gratification relates to other similar skills such as patience, impulse control, self-control, and willpower, all of which are involved in self-regulation. ECC and high BMI in preschool children, both being pathological conditions with a psychological basis, have also been particularly associated with the inability to defer gratification.⁹

CONCLUSION

Authors found that Children with ECC were more self-controlled, and children with high BMI were more impulsive.

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