

# The Effect of the Date Palm on the Increase of Short-term Memory and Concentration of Learning

Farida Linda Sari Siregar, Febrina Oktavinola Kaban

Lecturer of Maternity and Pediatric Nursing Departmen Faculty of Nursing Universitas Sumatera Utara

**Keywords:** The Date Palm, Short-term Memory, Concentration of Learning.

**Abstract :** The fruit is known as the palm fruit is usually consumed as sweets, especially in the month of fasting. Sugar that is safe for children and can be used directly for metabolism, namely sugar in the form of disaccharides. Types this research uses quasi experimental research design using pre post test design. In this study, 20 students of Elementary School No. 065014 will be given the date palm (100 gr/day) during 60 days before the lesson starts every morning. The bivariate analysis used in this study is inferential statistical analysis namely paired t-test. Based on the results of the study a mean value of short term memory's after being given the date palm was 12.40, and the mean value of short term memory's before taking the date palm 7.90 ( $p = 0.01$ ). Based on the results of the study a mean value of concentration of learning after being given the date palm was 5.70, and the mean value of concentration of learning before taking the date palm was 4.25 ( $p = 0.03$ ). Conclusion of this study is that the date palm can increase short-term memory and concentration of learning for student.

## 1 INTRODUCTION

The date palm which has the Latin name *Phoenix dactylifera* a palm tree in the genus *Phoenix*. The fruit is known as the palm fruit is usually consumed as sweets, especially in the month of fasting. Sugar that is safe for children and can be used directly for metabolism, namely sugar in the form of disaccharides. Blood glucose is vital for the brain to function properly, among others expressed in memory ability. Dates have a high sugar content and generally come from glucose and fructose.

Memory is the individual's ability to store information and that information can be recalled to be used some time later. Short-term memory is a temporary storage events or items received in a short time, ie less than a few minutes, usually even shorter (a few seconds). Short-term memory is not permanent, the storage will be erased in a short time. Short-term memory is characterized by recollection about 5 to 10 items for a few seconds to a few minutes (Atkinson, 2011). People who can remember well generally have good learning abilities as well.

Research by Soenggono (2008) conducted on 30 female students, aged between 19-23 years who

were given a breakfast of porridge, reported a significant increase in blood glucose levels and memory were given before and after treatment ( $p < 0.05$ ), and found a correlation between elevated blood sugar levels with memory ( $p < 0.05$ ).

Learning concentration is one of the internal problems experienced by students in the learning process. Learning concentration means the ability to focus attention on the lesson. Concentration of attention is focused on the content of learning material and the process of obtaining it (Dimiyati, 2006).

Individuals are allowed to be able to store information that they receive all the time using memory. Without memory, the individual is impossible to reflect on himself, because self-understanding is very dependent on a continuous awareness, which can only be accomplished in the presence of memory. In normal circumstances 90% of the energy required to maintain the ions across the cell membranes of the brain and deliver electrical impulses. Glucose needs an average of about 5.5 mg / 100 g of brain (77 mg / min for the entire brain) (Ganong, 2009). Learning concentration can be concluded as something that is important to have in learning activities, where individuals can focus their attention and mind on each learning implementation

well so that they are able to understand each material given. Cognitive development in children progresses from what they see to the reason why the assessment is given. The ability to remember symbols and use memory deposits about past experiences. One of the main cognitive tasks is mastering the concept of conservation (Wong, 2008).

This study aims to determine whether or not the effect of the palm of the short-term memory and concentration of student learning. The hypothesis of this study is there is an influence of the date palm against short-term memory and concentration of student learning.

## 2 METHODS

Types this research uses quasi experimental research design using pre post test design. In this study, 20 students of Elementary School No. 065014 will be given the date palm (100 gr/day) during 60 days before the lesson starts every morning. Dried the date palm Madinah in 100 g based on laboratory test contains water 11.75%, fat 6,8%, fiber 8,1%, and sugar 55,23%. Short-term memory was measured using digit test span forward & backward Wechsler Intelligence Scale For Children - Revised (WISC-R). The concentration of learning was measured using observation sheet of concentration of learning. The bivariate analysis used in this study is inferential statistical analysis namely paired t-test.

This study was approved by the ethics committee of the faculty of nursing, University of Sumatera Utara, and in accordance with the requirements set out in national guidelines for clinical trials and apply similar research.

## 3 RESULTS

### 3.1 Short Term Memory

Based on the results of the study showed the average short-term memory of students before being given the date palm with a reverse number = 3.89 numbers. A minimum value of 1 number and a maximum value of 7 digits. Average short-term memory of students before being given the date palm with advanced numbers = 4.05 numbers. A minimum value of 0 number a maximum value of 7 digits.

Table 1: Short-term memory before being given the date palm.

Short-term memory	Mean	SD	Min-Max
Rows of advanced numbers	4.05	2.164	0-7
Rows of numbers backwards	3.89	1.309	1-7

Based on the results of the study showed the average short-term memory of students in the intervention group after being given the date palm with a number of numbers backwards = 5.90 numbers. A minimum value of 4 digits and a maximum value of 7 digits. The average short-term memory of students before being given the date palm with a row of advanced numbers = 6.50 numbers. A minimum value of 5 digits and a maximum value of 7 digits.

Table 2: Short-term memory after being given the date palm.

Short-term memory	Mean	SD	Min-Max
Rows of advanced numbers	6.50	0.607	5-7
Rows of numbers backwards	5.90	1.021	4-7

### 3.2 Concentration of Learning

Based on the results of the study concentration of students before being given the date palm showed the focus of the views of the majority of students directed towards the other (looking left/right) as many as 9 students (45%), the body language of students who played with stationery as many as 8 people (40%), and attitude in rowdy/noisy class/control as many as 14 people (70%).

Table 3: Student concentration before being given the date palm

Concentration of Learning	f	%
Focus of view		
• Focus on the teacher / instructor	5	25
• Focus on the whiteboard / props	6	30
• Going to another direction (looking left / right)	9	45
Body language		
• Sit upright	4	20
• Sit in a lean position	4	20
• Sleepy	4	20

• Play with stationery	8	40
Attitudes in class		
• Calm (does not cause noise)	6	30
• Crowd / noisy / control	14	70

Based on the results of the study concentration of students after being given the date palm showed the focus of the views of the majority of students focus on the teacher/instructor as many as 14 students (70%), the body language of students who sit upright as many as 15 people (70%), and attitude in class who calm (does not cause noise) as many as 20 people (100%).

Table 4: Student concentration after being given the date palm

Concentration of Learning	f	%
Focus of view		
• Focus on the teacher / instructor	14	70
• Focus on the whiteboard / props	4	20
• Going to another direction (looking left / right)	2	10
Body language		
• Sit upright	15	75
• Sit in a lean position	3	15
• Sleepy	2	10
• Play with stationery	0	0
Attitudes in class		
• Calm (does not cause noise)	20	100
• Crowd / noisy / control	0	0

### 3.3 The Effect of the Date Palm on the Increase of Short-term Memory

Based on the results of the study a mean value of short term memory's after being given the date palm was 12.40, and the mean value of short term memory's before taking the date palm 7.90 (value of  $p = 0.01$ ), it can be concluded that the date palm effects can increase short-term memory.

Table 5: The Effect of The date palm on the increase of short-term memory

Groups	Mean	SD	Mean Difference	P Value
Pretest	7.90	2.882	4.500	0.01
Posttest	12.40	1.273		

### 3.4 The Effect of the Date Palm on the Increase of Concentration of Learning

Based on the results of the study a mean value of concentration of learning after being given the date palm was 5.70, and the mean value of concentration of learning before taking the date palm was 4.25 (value of  $p = 0.03$ ), it can be concluded that the date palm effects can increase concentration of learning, it can be concluded that the date palm effects can increase concentration of learning.

Table 6: The Effect of the date palm on the increase of concentration of learning

Groups	Mean	SD	Mean Difference	P Value
Pretest	4.25	1.182	1.050	0.03
Posttest	5.70	0.801		

## 4 DISCUSSION

The increase in short-term memory due to the main content in the date palm are simple sugars. Type of simple sugar has a low glycemic index at the date that is glucose and fructose. Glucose and fructose is involved in supplying energy to the brain easily. Glucose and fructose are quickly absorbed by the intestine without digested by the enzymes in the intestine, taken blood flow through the blood-brain barrier rapidly and then metabolized to perform the function of the brain, one of which is learning and memory (Magistretti, Pellerin, & Martin, 2007). Brain, neural networks and other red blood cells require a constant supply of blood glucose. The brain requires 150 grams of glucose per day. Brain and other tissues to oxidize glucose to CO<sub>2</sub> and H<sub>2</sub>O (Marks, Marks & Smith, 2000).

Research by (Subhash, 2015) conducted APP-transgenic mice from the age of 4 months were fed custom-mix diets (pellets) containing 2% and 4% date fruits reported that significant memory deficits, increased anxiety-related behavior, and severe impairment in spatial learning ability, position discrimination learning ability and motor coordination.

The results of the study by (Sitohang, 2015) were 80 elementary school students who were given 100 grams the date of palm every day for 3 days showed there were significant differences in posttest values in the intervention and control groups. The results of research by (Ami, 2008) on 30 students who were given porridge containing 480 calories, 68.75% carbohydrates reported that there was an increase in memory at 30 minutes and a significant increase at 90 minute. The results of this study also report that an increase in blood glucose is associated with increased memory.

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## 5 CONCLUSIONS

The date palm given to students every day can affect short-term memory and concentration of learning.

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