INTERACTIVE LECTURING FOR MEANINGFUL LEARNING IN LARGE GROUPS

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LEGENDS TO THE FIGURES:

Figure 1. The flowchart of the interactive lecture.

Figure 2. Templates showing the central regulation of growth hormone release and its peripheral effects as an advanced organizer (a) and its elaborated form (b).

Figure 3. Cases projected on to the screen for 5 min during which the students were asked to mark the structured evaluation charts.

Figure 4. Structured Evaluation Chart.

Figure 5. Overall score given to the implemented interactive lecture.

Figure 6. Student performances in evaluating and analyzing the cases about chronic stress (A) and (B) growth hormone excess. *Insufficient:* scores below 15 in 30 points; *Needs further support:* scores between 15-20; *Sufficient:* Scores above 20.

Table 1. Students' perceptions of the implemented interactive lecture.

Student opinions	Agreement	Partial agreement	Disagreement	No comment
	number of students & percentages			
In general, planning, organization, and implementation were successful	76 76.8 %	22 22.2 %	1 1.0 %	-
Learning environment was interactive	52 54.7 %	39 41.1 %	3 3.2 %	1 1.1 %
During the presentation, prior knowledge was taken into consideration	60 61.2 %	24 24.5 %	13 13.3 %	1 1.0 %
Standards of interactive lecturing were reached	61 64.9 %	32 34.0 %	1 1.1 %	-
Transferable skills and problem solving skills were gained	44 44.9 %	47 48.7 %	7 7.1 %	-

Table 2. Students' opinions narrated about the implemented interactive lecture.

"…repetitions were positive. There should be more questions during the lecture. I did not sleep at all.."
".. the time I stayed awake was much longer than in the other lectures."
"..the new method helped me to concentrate and learn during the lecture."
"...generally, I can keep my concentration for at most 25 minutes and I sleep during the rest of lecture. But, today I was interested until the end."
"..when the lecture is given like this, I don't fall asleep and I can concentrate better. I feel that I will not forget what I learned today …"
".. it was much more understandable and easy to follow.."
"..it was a lecture that I learned in class. It was better for me to be given the questions during the lecture..."
"..clinical cases supported and facilitated my learning.."
"..I wish the lecture could proceed more slowly and include more repetition. It would be much better if a repetition could be made every 10-15 minutes and then passed to new information.."
".. it was difficult to concentrate, because the lecture was presented fast.."
"... all lectures must be given this way.."
"...I find it a good teaching system. If the other teachers also used it, we could get used to it and be able to analyse the clinical symptoms and apply what we learned ...."
"...I believe all the other lectures should be, as today's lecture was, not detailed and understandable. The content of the lectures must be more focused..."
"..it couldn't be better.."
"...maybe a 2-hour general lecture including the anatomy, biochemistry and physiology of the subject can be given.."

Fig. 1.

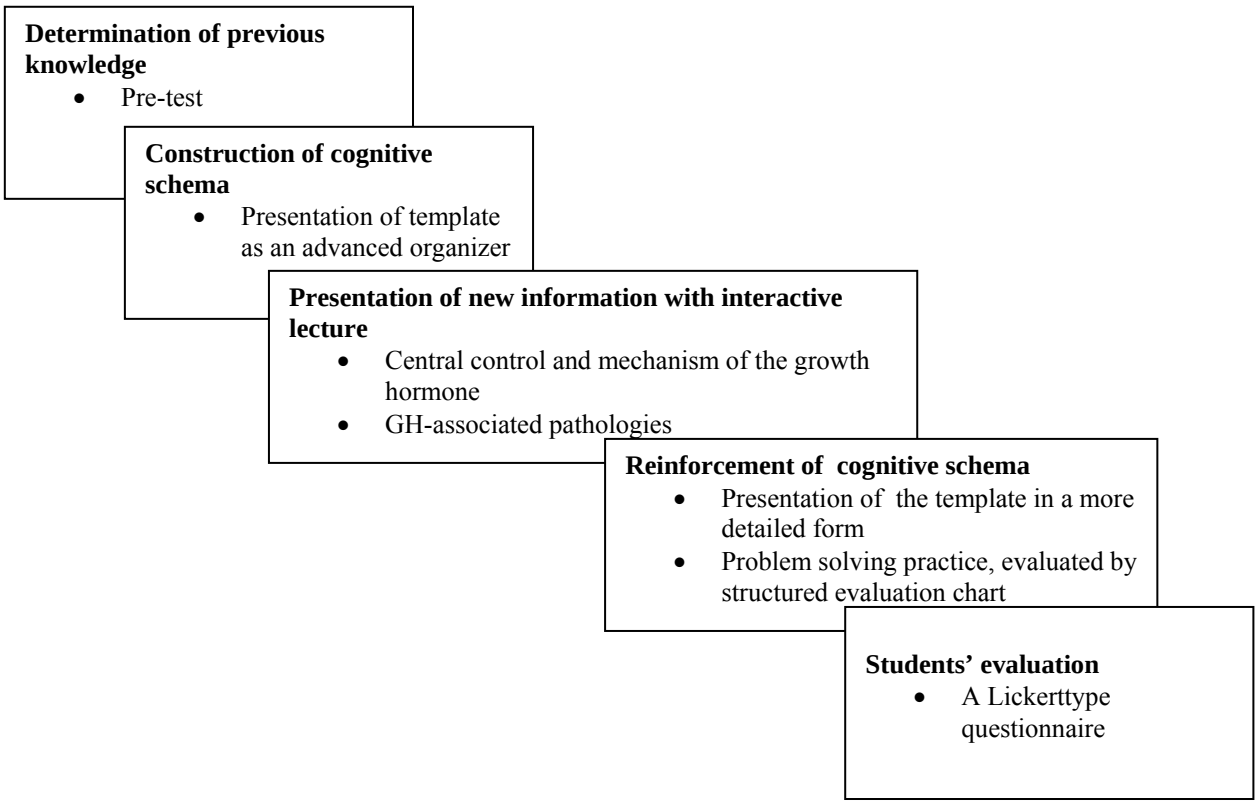
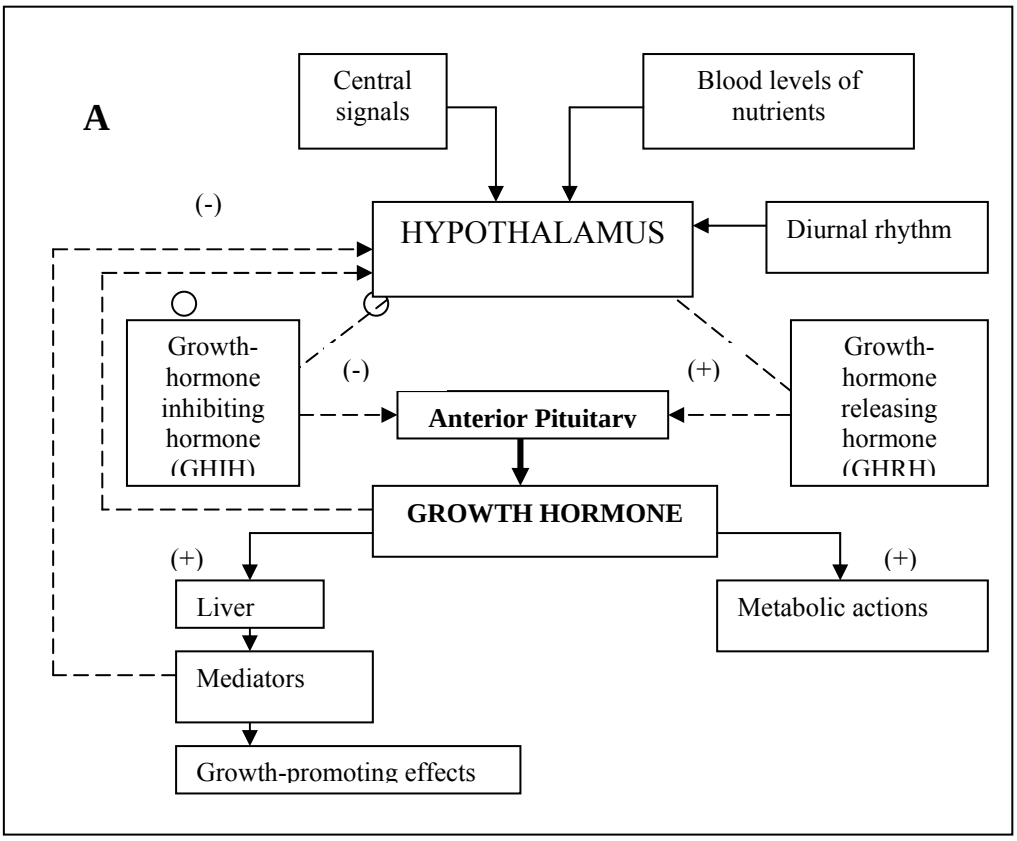

Determination of previous knowledge
Pre-test
Construction of cognitive schema
Presentation of template as an advanced organizer
Presentation of new information with interactive lecture
Central control and mechanism of the growth hormone
GH-associated pathologies
Reinforcement of cognitive schema
Presentation of the template in a more detailed form
Problem solving practice, evaluated by structured evaluation chart
Students' evaluation
A Lickerttype questionnaire

Fig. 2


A
Central signals
Blood levels of nutrients
(-)
HYPOTHALAMUS
Diurnal rhythm
Growth-hormone inhibiting hormone (GHIH)
(-)
(+)
Growth-hormone releasing hormone (GHRH)
Anterior Pituitary
GROWTH HORMONE
(+)
(+)
Liver
Metabolic actions
Mediators
Growth-promoting effects

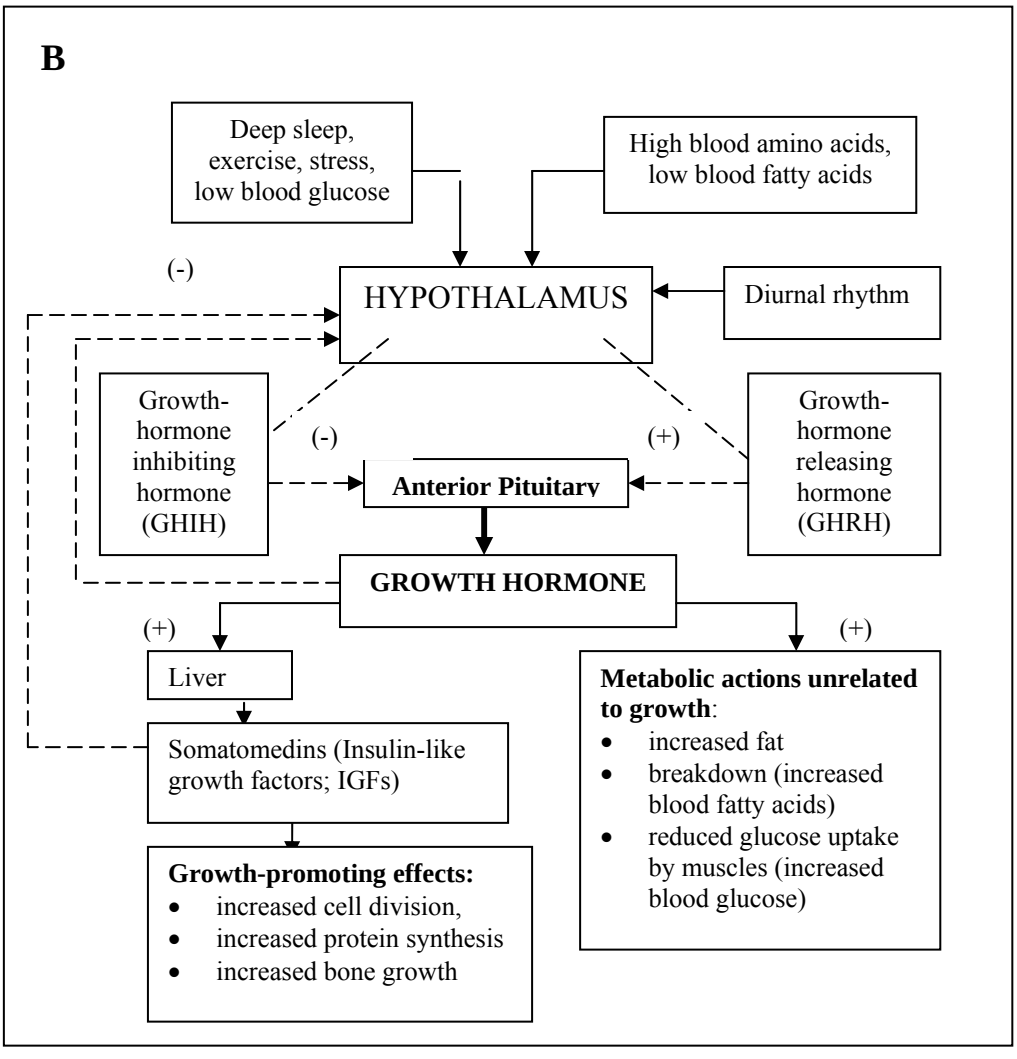

B
Deep sleep, exercise, stress, low blood glucose
High blood amino acids, low blood fatty acids
(-)
HYPOTHALAMUS
Diurnal rhythm
Growth-hormone inhibiting hormone (GHIH)
(-)
(+)
Growth-hormone releasing hormone (GHRH)
Anterior Pituitary
GROWTH HORMONE
(+)
(+)
Liver
Metabolic actions unrelated to growth:
• increased fat breakdown (increased blood fatty acids)
• reduced glucose uptake by muscles (increased blood glucose)
Somatomedins (Insulin-like growth factors; IGFs)
Growth-promoting effects:
• increased cell division,
• increased protein synthesis
• increased bone growth

Fig. 3.

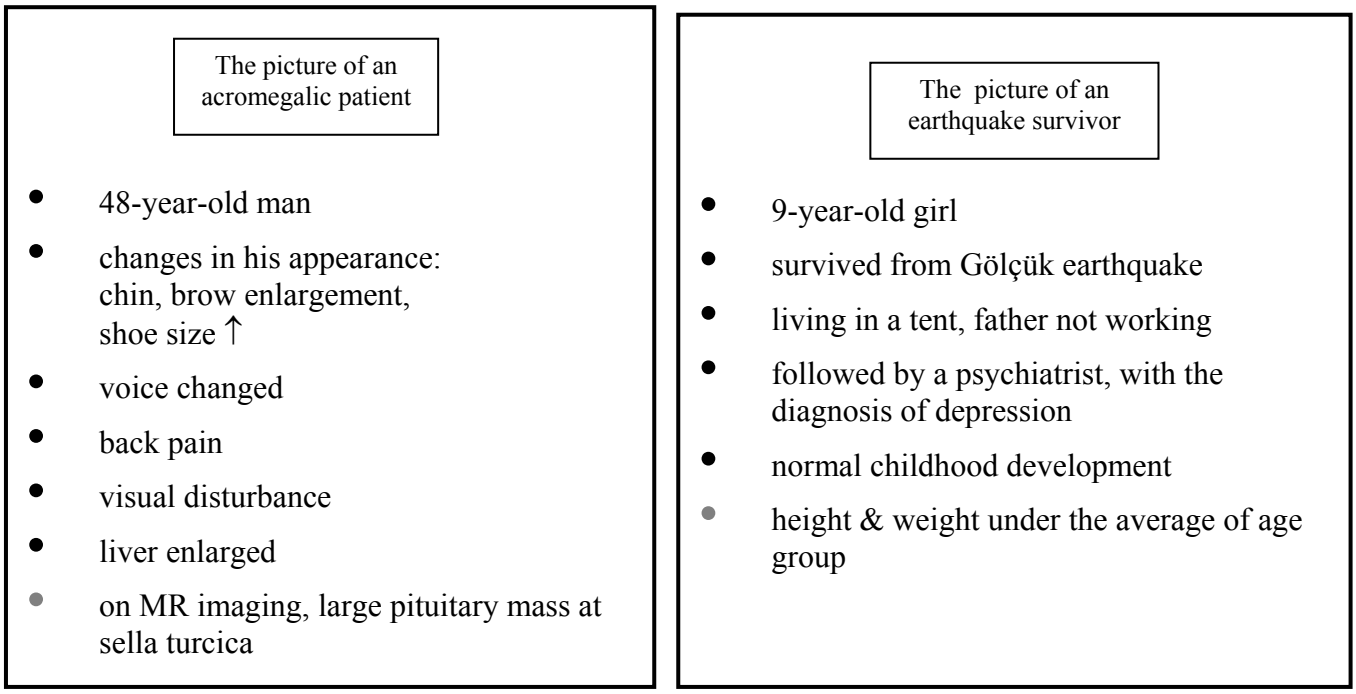

The picture of an acromegalic patient
48-year-old man
changes in his appearance: chin, brow enlargement, shoe size ↑
voice changed
back pain
visual disturbance
liver enlarged
on MR imaging, large pituitary mass at sella turcica
The picture of an earthquake survivor
9-year-old girl
survived from Gölçük earthquake
living in a tent, father not working
followed by a psychiatrist, with the diagnosis of depression
normal childhood development
height & weight under the average of age group

Figure 4.

Name: **Number:**

Mark the left column with a plus sign (+) if the effect is present; mark as (-) if it is absent and leave the right column blank to be used for scoring.

Regarding the central effects :

	GHRH is increased	±3
	GHIH is increased	
	Higher brain centers (amygdala and cortex) are involved	±4
	Growth hormone secretion is increased	±3
	Growth hormone secretion is decreased	
	CRF and ACTH secretions are increased	±3
	CRF and ACTH secretions are decreased	

Regarding the plasma levels of substances & peripheral effects:

	High blood cortisol level	±2
	Normal blood cortisol level	
	İncreased synthesis of IGFs	±3
	Blood glucose level is increased	±1
	Blood glucose level is decreased	
	Blood fatty acid level is increased	±1
	Blood fatty acid level is decreased	
	Blood amino acid level is increased	±1
	Blood amino acid level is decreased	
	Blood epinephrine/ norepinephrine levels are increased	±3
	Blood epinephrine/ norepinephrine levels are decreased	
	Blood epinephrine/ norepinephrine levels are normal	

Regarding the effects at the cellular level:

	Cell division is increased	±1
	Cell division is decreased	
	Protein synthesis is increased	±1
	Protein synthesis is decreased	
	Bone growth is increased	±1
	Bone growth is decreased	
	Fat breakdown is increased	±1
	Fat breakdown is decreased	
	Protein catabolism is increased	±1
	Protein catabolism is decreased	
	Ossification of epiphyseal plate is increased	±1
	Ossification of epiphyseal plate is decreased	

Total: 30 points

Fig. 5.

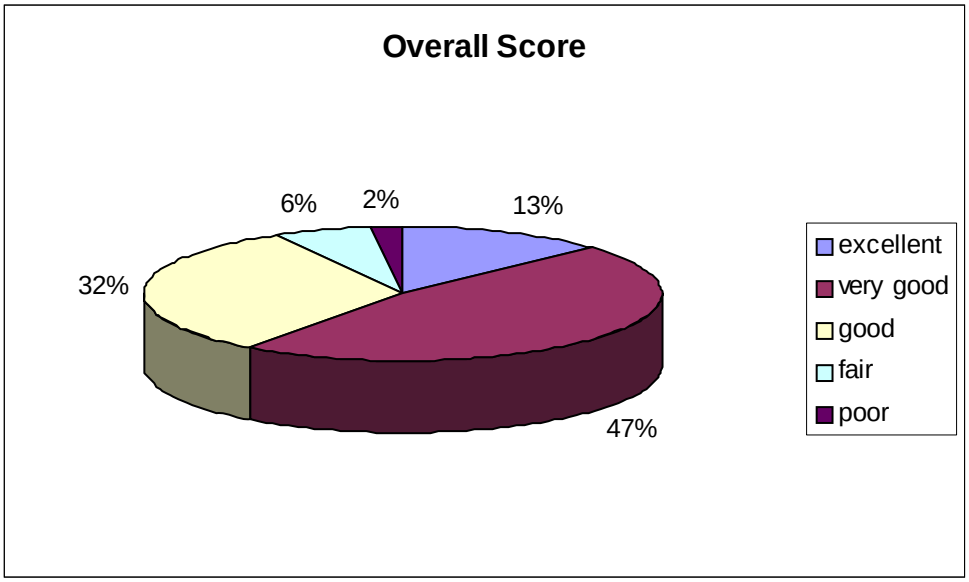
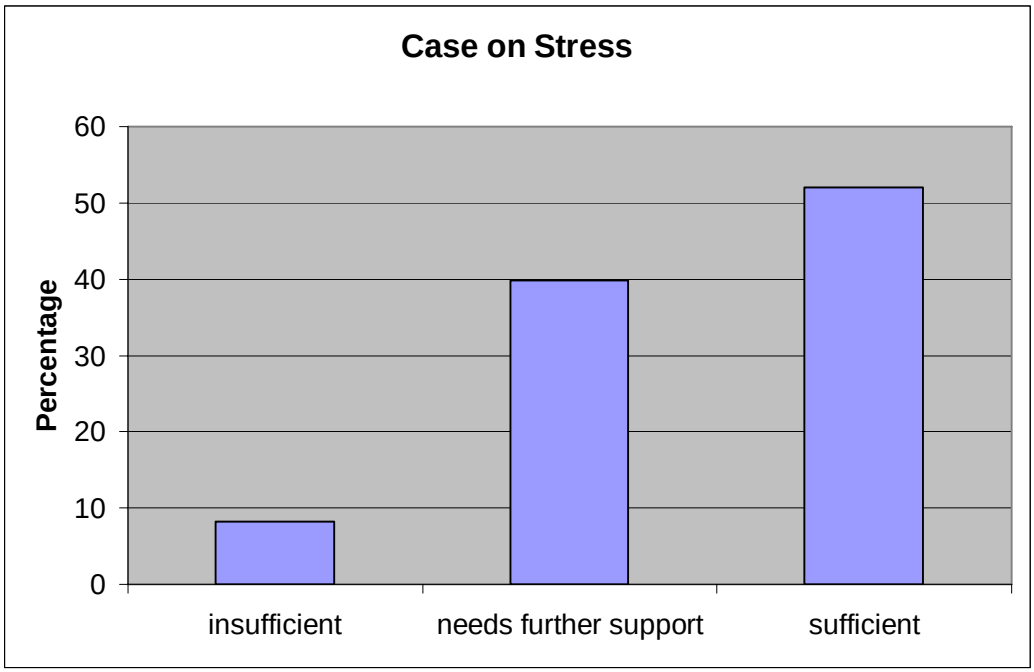
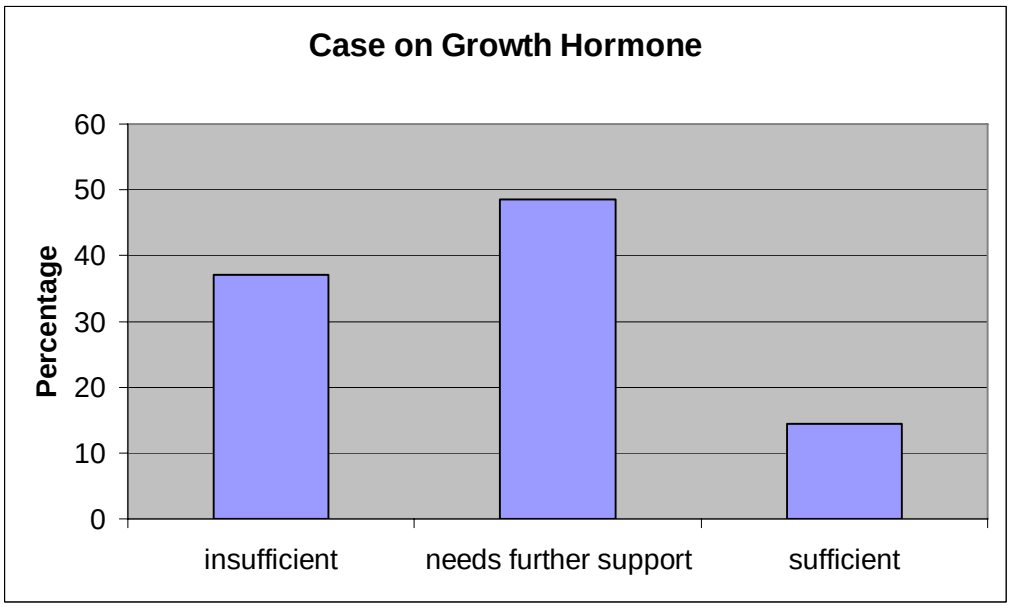


Fig. 6.


Case on Stress
Percentage
60
50
40
30
20
10
0
insufficient
needs further support
sufficient

A


Case on Growth Hormone
Percentage
60
50
40
30
20
10
0
insufficient
needs further support
sufficient

B