Araştırma Makalesi – Original Article

Investigation of Attention Levels Through Cancellation Test in Third Trimester of Pregnancy *

Üçüncü Trimesterdeki Gebelerin Dikkat Düzeylerinin İşaretleme Testi İle Araştırılması

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ABSTRACT

Aim: Increased metabolic needs and hyperactive hormones during pregnancy can cause some psychological changes in pregnant women. In this study, attention levels in third stages of pregnancy are aimed to investigate.

Materials and Methods: This descriptive study was conducted among women who applied to Amasya Sabuncuoğlu Şerefeddin State Hospital Obstetrics and Gynaecology Clinic between 01.05.2016 and 01.03.2017. The research population consisted of women (n=60) who non-pregnant women in the control (n=30) and 3rd trimester pregnants in the case group (n=30). The Marking Test was used to determine attentional levels.

Results: When the data were evaluated, there was no statistically significant difference between the groups in terms of the number of targets marked, number of missed targets and number of missed target numbers (p> 0.05). The duration of the scan was significantly longer in Group 2 than Groups 1 (respectively; p = 0.011 for Test 3 and p = 0.014 for Test 4).

Conclusions: It's seen that, the length of time needed for attention got longer in the last days of the pregnancy. For this reason, it is recommended to take this situation into consideration during the last trimester trainings.

Key Words: Pregnancy, Trimester, Marking test, Attention

ÖZ

Amaç: Gebelik süresince artan metabolik ihtiyaçlar ve hiperaktif hormonlar gebelerde bazı psikolojik değişikliklere neden olabilirler. Bu çalışma gebeliğin üçüncü trimesterinde dikkat düzeylerinin araştırılması amacıyla yapılmıştır.

Gereç ve Yöntem: Tanımlayıcı nitelikte olan bu araştırma, Amasya Sabuncuoğlu Şerefeddin Devlet Hastanesi Kadın Hastalıkları ve Doğum Polikliniğine 01.05.2016 ile 01.03.2017 tarihleri arasında başvuran kadınlarda gerçekleştirildi. Çalışma gruplarını; kontrol grubu kadınlar (n=30); ve 3. Trimester de ki gebeler (n=30) olmak üzere toplam n=60 kadın oluşturdu. Dikkat düzeylerini belirlemek için İşaretleme Testi kullanıldı.

Bulgular: İşaretlenen hedef sayısı, atlanan hedef sayısı ve yanlış işaretlenen hedef sayısı ortalamaları açısından gruplar arasında istatistiksel olarak anlamlı bir fark bulunmadı (p>0.05). Tarama süresinin gebeliğin son trimesterinde kontrol grubuna göre daha uzun olduğu bulundu (sırasıyla; Test 3 için, p = 0.011 and Test 4 için, p = 0.014).

Sonuç: Gebeliğin son dönemlerinde dikkatin sağlanması için gereken sürenin uzadığı görüldü. Son trimesterde uygulanılacak eğitimlerde bu durumun göz önünde bulundurulması önerilmektedir.

Anahtar kelimeler: Gebelik, Trimester, İşaretleme Testi, Dikkat

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INTRODUCTION

During pregnancy, various physiological changes occur in various organs and systems for fetal development and birth preparation. There are many hormonal changes in the pregnancy such as thyroid, estrogen, progesterone. These altered hormones integrate the metabolic adaptations of the pregnancy into the demands of fetal and newborn development.[1,2] On the other hand, during pregnancy, the female brains are undergoing a significant restructuring on the way to motherhood and the results are profound and permanent[3]. It is known that metabolic and hormonal changes, especially during pregnancy, are also related to cognitive functions such as depression, stress, anxiety, memory and attention deficit in the past.[4,5]

Attention, which is the basic element in learning and remembering, can be defined as a focus on thinking about an object or event for a certain period of time.[6] Attention is known to be a consequence of integrally working brain circuits to mark the selected object, largely due to the formation of sensing and action conversion steps.[7] Selective attention is an important brain function that mediates information selection to control movement which is under the supervision of the individual.[8]

Attention is closely related to memory functions by determining which information should pass to the memory for a short period of time.[9] When looked at the studies over pregnancy, there are the ones that show changes in memory and attention levels during of pregnancy.[8,10,11] The purpose of this present study is to investigate how the attention levels of women that is at third trimester of pregnancy is influenced.

METHOD

Type of Study: This study was planned and conducted as a descriptive kind of study.

Place and Time of the Research: It was performed with pregnant women who applied to Amasya Sabuncuoğlu Şerefeddin State Hospital Obstetrics and Gynaecology Policlinic between 01.05.2016 and 01.03.2017.

Research Population and Sampling: The research population consisted of women (n=60) who applied to Amasya Sabuncuoğlu Şerefeddin State Hospital Obstetrics and Gynaecology Department between 01.05.2016 and 01.03.2017.

By not going to the sample selection for the collection of data; women with no known neurological and psychiatric illnesses and volunteer to participate in the study were included in the study. Control and case group were formed as follows.

Group 1: Non-pregnant women (n = 30)

Group 2: Women who were in the 3rd trimester of pregnancy (n = 30)

Application of Research and Data Collection: Amasya Sabuncuoğlu Şerefeddin State Hospital was granted permission from the Ethics Committee of the Amasya University Health Sciences Ethics Committee (E-10439). Then, 60 women who agreed to participate in the survey were informed about the application of the Cancellation Test. The application was completed with a stop watch for each participant. For the four different forms of the Cancellation Test; regular letters, regular forms, irregular letters and irregular forms, these times were recorded separately.

Data Collection Tools: Participants were provided with informed consent forms and test was applied after their approval. In the study, "Demographic form" and "Cancellation Test", which were prepared in accordance with the aim and contain descriptive characteristics were used. Primarily, in which trimester the pregnants were first determined. Following it, women were asked to complete the demographic form which includes information such as age, number of pregnancies, medications used, whether or not a chronic illness is present, and smoking status. After that, Cancellation Test was applied to evaluate the level of attention.[12,13]

Cancellation Test is a test that measures mental ability and activity speed.[14] Karakaş et al. also stated that this test measures visual scanning, reaction speed and attack.[13] The Cancellation Test consists of four

separate test forms consisting of regular letters (Test 1), irregular letters (Test 2), regular forms (Test 3) and irregular shapes (Test 4) There are 60 targets in each form and the targets are arranged to be 15 in each quadrant of the page. The tests were given to the participant in order and when called "start", the individual was asked to circle the target letter or shape as quickly and accurately as possible. The tests were terminated when the participant thought she had finished her goals and said "over". In the test scoring, all four subtests were evaluated, and the average number of targets marked, the number of missed targets, the number of false targets marked, and the scan duration for each participantwere calculated.[15,16] While the Cancellation Test was being carried out, all participants were evaluated in a quiet and reliable environment so that the environmental factors did not affect the study.

Statistical Analysis

Statistical analysis was performed using the following tests in the SPSS 20.0 (subscription ID:503576575) computer program and $p < 0.05$ was considered significant. Statistical analysis: data are presented as [mean ± standard deviation, median, (least-most), n (%)].

The Kolmogorov-Smirnov test was applied to the measurable parameters to determine whether the distribution was normal or abnormal. All data show normal distribution and the difference between the groups was assessed by the student t test.

RESULTS

The average age of the women participating in the survey is 30.13 ± 7.23. 26.7% of all of women are between the ages of 24-29 and 33.3% of them are high school graduates. 80% of them did not work and 53.3% reported that the income was between 1001-2000 TL. Table 1 also shows that the demographic characteristics of the groups. As Table 1 shows, the proportion of non-working women in the two groups is higher. They are 83.3% and 76.7% respectively ***(Table 1)***

Table 1. Demographic Characteristics

		Non-pregnant (n:30)		**3rd Trimester pregnant (n:30)**	
		n	%	n	%
Age groups	18-23	7	23.3	7	23.3
	24-29	8	26.7	8	26.7
	30-34	6	20.0	8	26.7
	35 and above	9	30.0	7	23.3
Educational status	Literate	2	6.7	1	3.3
	Primary	6	20.0	8	26.7
	Secondary	5	16.7	7	23.3
	High school	12	40.0	8	26.7
	University	5	16.7	6	20.0
Employment status	Employed	5	16.7	7	23.3
	Unemployed	25	83.3	23	76.7
Income	0-500 TL	2	6.7	1	3.3
	501-1000 TL	4	13.3	1	3.3
	1001-2000 TL	13	43.3	19	63.3
	2001-3000 TL	5	16.7	4	13.3
	3001 TL and above	6	20.0	5	16.7
Total		30	100	30	10.0

It was determined that 30% of the women had second pregnancies and 73.3% didn't have any abortions or miscarriage. Details of medical and obstetric information are given in Table 2. 36.7% of the 3rd Trimester pregnant women were found using ferro-medicines and 20% were using vitamins. 83.3% of 3rd Trimester pregnant stated that 3rd Trimester pregnant women had a voluntary pregnancy and 90% stated that they did not have any problems during pregnancy ***(Table 2)***.

Table 2. Medical and Obstetrical Information

		Non-pregnant (n:30)		3rd Trimester pregnant (n:30)	
		n	**%**	**n**	**%**
Number of pregnancies	Never had a pregnancy	5	16.7	1	3.3
	First pregnancy	4	13.3	10	33.3
	2nd pregnancy	11	36.7	7	23.3
	3rd pregnancy	8	26.7	8	26.7
	4 and more pregnancy	2	6.7	4	13.3
Was it a voluntary pregnancy?	Yes	0	0.0	25	83.3
	No	0	0.0	5	16.7
Did you have any problems during pregnancy?	Yes	0	0.0	6	20.0
	No	0	0.0	24	80.0
Do you have a disease?	Yes	4	13.3	3	10.0
	No	26	86.7	27	90.0
Use of ferro-medicine	Yes	1	3.3	11	36.7
	No	29	96.7	19	63.3
Use of vitamins	Yes	0	0.0	6	20.0
	No	30	100.0	24	80.0
Total		30	100.0	30	100.0

The tests compared with the educational status, there wasn't a significant relationship ($p > 0.05$). As you went from literacy to high school and university, the number of correct increased, the amount of times and the number of wrongs decreased.

On the other hand, there were no significant differences ($p > 0.05$) between the number of pregnancies, voluntary or involuntary pregnancy, problems in pregnancy, presence or absence of a chronic disease, ferro- and vitamin drug use and Cancellation Test results ***(Table 2)*.**

The average number of targets marked by all participants was 54.08 ± 10.51 in Test 1. 55.38 ± 6.52 in Test 2. 53.28 ± 8.33 in Test 3 and 54.03 ± 9.91 in Test 4. The averages of the test completion times were 94.17 ± 45.26 sec for Test 1, 105.47 ± 69.72 for Test 2, 97.13 ± 47.85 for Test 3 and 98.28 ± 47.47 for Test 4. There was no significant difference between the groups in terms of the number of targets marked, number of skipped targets and number of false targets ($p > 0.05$) ***(Table 3)***. The mean of the groups in terms of the scanning time of the Cancellation Test is given in Figure 1. The duration of the scan was significantly longer in Group 2 than Groups 1 (respectively; $p = 0.011$ for Test 3 and $p = 0.014$ for Test 4). Also, the Test 1 and Test 2 did not show a significant difference ($p > 0.05$).

Table 3. The Averages of Test Results According to Groups

		Non-pregnant (n:30)	3rd Trimester pregnant (n:30)	t value	p value
Number of correct targets marked	**Test 1**	52.90 ± 13.02	55.27 ± 7.23	t=-0.87	p=0.38
	Test 2	55.47 ± 6.23	55.30 ± 6.90	t=0.09	p=0.92
	Test 3	54.17 ± 6.86	52.40 ± 9.62	t=0.81	p=0.41
	Test 4	53.87 ± 11.02	54.20 ± 8.85	t=0.12	p=0.89
Number of targets skipped	**Test 1**	6.10 ±11.109	4.73 ± 7.23	t=0.56	p=0.57
	Test 2	4.53 ± 6. 23	4.70 ± 6.90	t=-0.98	p=0.92
	Test 3	5.83 ± 6.86	7.60 ± 9.62	t=-0.81	p=0.41
	Test 4	6.13 ± 11.02	5.80 ± 8.85	t=0.12	p=0.89
Number of false targets marked	**Test 1**	.10 ± .30	.03 ± .18	t=1.02	p=0.31
	Test 2	.03 ± .18	0	t=1.00	p=0.32
	Test 3	.43 ± 2.012	0	t=-0.14	p=0.88
	Test 4	27 ± .64	.27 ± .98	t=0	p=1.00
The scan duration of test	**Test 1**	86.67 ± 42.27	101.67 ± 47.59	t=-1.29	p=0.20
	Test 2	92.93 ±39.33	118.00 ± 89.54	t=-1.40	p=0.16
	Test 3	81.97 ± 35.48	112.30 ± 54.08*	t=-2.56	p=0.01
	Test 4	82.37 ± 32.73	114.20 ± 54.68*	t=-2.73	p=0.009

Values are given as mean ± standard deviation.*p<0.05

DISCUSSION

During pregnancy it is known that there are physiological and psychological changes in women. It is known that there is a relationship between physiological changes in pregnancy and cognitive functions.[17,18,19] In this study, there were no differences among the number of pregnancies, the presence or absence of voluntary pregnancy, the use of iron and vitamin medication, and the level of attention of the pregnant women. During the last trimester of pregnancy, the time needed for the pregnants to gather attention extends especially for visual objects.

In a large number of studies, it has been determined that pregnancy has a negative effect on memory and cognitive functions.[10,20] For example, in a study conducted, it was found that verbal memory decreased during pregnancy and this decrease continued after birth.[21] According to our findings, it was determined that there was no difference in the number of correct targets in terms of third trimester. The poor performance in the Cancellation Test reflects unilateral unawareness falsification of response sudden cerebral disturbance, confusion of attention in spatial distribution and slowing of overall response.[22] In this study. the scanning time especially for visual objects was found to be prolonged in the last period of the pregnancy. In similar studies, it was found that attention deficit is being experienced and focusing and recalling abilities of what is read were moderately impaired in the third trimester of pregnancy compared to nonpregnants.[8,23] A study by Keenan et al. showed that a decrease in memory related to pregnancy was detected in the third trimester, indicating that this was not due to physical changes during this period.[24] In a study of 357 pregnancies, it was found that during the third trimester of pregnancy, anxiety was greater than that of the first and second trimester.[25] In this study, the visual scanning period without any difference in the number of targets shows was prolonged. It is thought that this may be due to the increased level of anxiety towards the last trimester of pregnancy. In the next process, the study should be support with hormonal and electrophysiological measurements.

CONCLUSION

Pregnancy is a very important physiological factor in the life of woman. It has been observed in the last period of pregnancy that attention and focusing takes more time. For this reason, it is suggested to take this into consideration and to give time to the pregnant during the trainings to be done in the last trimester. In addition, it will be useful to carry out comprehensive and long-term studies to determine whether the slowing of the response rate seen during the last trimester of pregnancy has improved after the pregnancy and if so to understand after how long it has changed. Such studies on pregnancies are important to understand neurocognitive changes during pregnancy.

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