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Does the *Anastatica Hierochuntica* plant shorten the duration of labour? A prospective observational study*

Filiz Okumuş^{1**}, Halime Öncü-Çelik², Nevin Şahin³

Abstract

Objective: This study aims to investigate the effect of *Anastatica Hierochuntica* L. on the duration of labour in primiparous women.

Methods: A prospective, case-controlled study with an intervention (n=28) and control (n=29) group. Participants were not randomized; their preferences related to the use of the *A. Hierochuntica* L. determined the group in which they would be included. In the intervention group, *Anastatica Hierochuntica* L. was used by all women. Standard care continued for both the intervention and control group. The duration of the first and second stage of labour were evaluated and compared between groups.

Results: Participants' mean of age was 27.54 ± 4.52 (min. 20, max. 37) years and mean of gestational age was 39.63 ± 0.81 weeks. The mean duration of the second stage of labour was 28.42 ± 12.33 minutes for the *Anastatica Hierochuntica* L. group and 18.93 ± 10.48 minutes for the control group ($p = 0.002$). The total duration of labour was 221.50 ± 58.97 minutes for the intervention group and 193.13 ± 54.75 minutes for the control group. There were significant differences between the groups in the second stage and total duration of labour ($p < 0.050$). There was no significant difference between the groups in terms of newborns' mean birth weight, and the 1- and 5-minutes Apgar scores, and obstetric interventions.

Conclusion: The results of the study revealed that the *Anastatica Hierochuntica* L. had no effect on shortening the duration of labour.

Keywords: *Anastatica Hierochuntica*, *Obstetric labour*, *peripartum women*, *Complementary therapies*

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Introduction

Childbirth is often described as a difficult and frightening experience by women.¹ Therefore, pregnant women about to give birth seek ways to circumvent childbirth dilemmas. Besides the physical and emotional advantages for women, a facilitated childbirth may increase maternal satisfaction, which is an important determinant of women's birth experience and is closely related to the duration of labour.²

Women often apply traditional methods to facilitate childbirth by alleviating the effects of prolonged labour, which has become a difficult and frightening experience due to the negative effects on maternal satisfaction. Information about traditional methods to facilitate childbirth is generally based on older family members or religious beliefs.³ However, evidence on the safety and efficacy of traditional methods is often inadequate to justify their use in pregnancy.⁴ Therefore, healthcare providers should be aware of the traditional practices women follow to facilitate childbirth and provide evidence-based knowledge on these methods to women.

Women are the most frequent users of traditional treatment methods across the world.⁵ These methods, which are widely accepted, particularly by women, are used in processes related to pregnancy and childbirth. Women use traditional treatment methods for their holistic care potential and to support naturalness and reduce medical interventions. The most tested traditional methods in obstetric studies include using ginger for pregnancy-related nausea and vomiting, raspberry leaf tea for cervical ripening, and perineum massage with herbal oils for preventing episiotomy.⁴ In addition, the effects of the *Anastatica Hierochuntica* plant (*A. Hierochuntica* L.), widely used to facilitate childbirth especially in Middle Eastern societies, on childbirth have not been sufficiently tested.⁶

The *A. Hierochuntica* L. is a land plant that can restore normal physiological and metabolic functions after rehydration, tolerating excessive drying of vegetative tissues even in severe anhydrous conditions.⁷ Although the plant is colorless during dry times, it turns green at contact with water and its closed branches open up.⁸ Hegazy et al.⁹

in their study on the plant's anatomical structure, suggested that the woody conductive tissue of the plant, which has a hydrostatic structure, also controls the movement of the branches. In addition, they reported that the conductive tissue on the underside of the handle is effective in opening dry branches due to its ability to transmit water faster. The conductive tissue on the handle enables rapid drying.⁹ Women place this plant in a water-filled bowl at the beginning of the childbirth. They believe that the childbirth will be easier as the branches of the plant open. The water in which the plant is soaked is consumed for its potential benefits.¹⁰

Despite limited scientific evidence on its safety and efficacy, the *A. Hierochuntica L.* is widely used for the treatment of problems with the reproductive system, such as menstrual cramps and uterine bleeding, and metabolic disorders such as diabetes.¹¹ In addition, *A. Hierochuntica L.* has been reported to be widely used by Palestinian healers in the treatment of infertility.¹² Because Anatolia is dominated by Islam and Christianity, sacred meanings had been given to this plant, evident from names such as “Fatima eli” (the palm of

Fatima) or “Meryem eli” (the palm of Mary).⁸ The *A. Hierochuntica L.* is a well-known plant among Muslim women from Anatolia who believe the plant facilitates childbirth.

In Turkey, despite the increasing accessibility of modern medicine, traditional treatment methods, especially during pregnancy and childbirth, remain popular. Offering consultancy, when required, about traditional treatment methods used by women during pregnancy and childbirth is among the ethical responsibilities of midwives. This study aims to investigate the effect of *A. Hierochuntica L.* on the duration of labour in primiparous women.

Material and methods

The study was designed as a prospective case-control study. This study was conducted in Istanbul at a private hospital from December 2019 to January 2020. The study included primiparous women who were between 18 and 49 years, had a singleton, cephalic presentation, and normal fetal heart rate. The participants were between 38 and 41 gestational weeks with no diagnosed chronic or gestational disease and were admitted to the delivery room with regular uterine

contractions. Participation in the study was voluntary. A total of 60 primiparous women who met the inclusion criteria and agreed to participate in the research were included in the study. Participants were not randomized, instead patients' preferences related to the use of the *A. Hierochuntica L.* determined their allocation to a group. Three participants could not complete the study due to emergency caesarean sections and were excluded. The study was completed by 57 primiparous women, 28 of whom were using the *A. Hierochuntica L.* because they believed it facilitated birth. The remaining 29 were in the standard care group (SCG) and did not use this traditional method to facilitate delivery (*Fig 1*).

The data were collected using personal information forms and labour follow-up forms. Forms were developed by researchers based on existing literature.¹³⁻¹⁶ The personal information form is a four-item form in which participants' descriptive characteristics are recorded. The labour follow-up form recorded the duration of labour and obstetric interventions and neonatal outcomes.

The hospital where the research was conducted is a place where the plant is widely used. The women came to give birth in the hospital brought the plant with them. The plant that was used by the women was imported from the country of origin, Saudi Arabia. It is a woody plant whose branches are closed and tight when it is dry but expand when immersed in water (*Image 1*). When the women are taken to the labour - delivery room, they place the plant in a deep, water-filled bowl (*Image 2a and b*) and believe that as the branches of the plant open, the cervical canal will open, and labour will be easier.

The primary outcomes were the duration of the active phase and the duration of the second stage. The secondary outcome included the Apgar scores of the newborns. The two groups were compared for factors that could potentially affect the labour process, such as maternal age, neonatal birth weight, the spontaneous rupture of membranes, episiotomy, and fundal pressure during labour. The duration of the active phase was calculated as the period from a 4-cm cervical dilation to full cervical dilation. The duration of the second stage was calculated as full dilation to the time of

birth. Total duration of birth was the period from the onset of regular contractions to the time of birth. The neonatal Apgar score was assessed at one and five minutes after birth.

Data collected were evaluated using Statistical Package for Social Sciences 22.0 software and analyzed using numbers, percentages, mean values, standard deviations, minimum and maximum values. To compare the two groups, descriptive characteristics and obstetric procedures were analyzed. For continuous data, the results were described by mean/median ranks. Categorical data were described by frequency and percentage. The chi-square test and Fisher's exact test were used to determine the difference between the groups in terms of descriptive characteristics and use of obstetric procedures. A Kolmogorov–Smirnov test was used to test the normality of the data in the outcome variables and were identified to be non-parametric ($p < 0.05$). To determine the difference between the groups in terms of the duration of labour, the Mann–Whitney U test was used. A p-value of < 0.05 was considered statistically significant for all comparisons.

Ethical considerations

The study protocol was approved by the institutional review board of the relevant university. Recruited participants in the two groups received a written description of the research purposes and were asked to provide written consent. Moreover, they were informed that they could withdraw from the study at any stage without any explanation.

Results

Participants' mean age was 27.54 ± 4.52 (min. 20, max. 37) years; the mean gestational weeks was 39.63 ± 0.81 (min. 38, max. 41). Somewhat more than a third (38.6%) of women were employed, and 68.4% had 11 or fewer years of education. There were no statistically significant differences in the descriptive characteristics between the intervention and SCG groups ($p > 0.05$) as shown in *Table 1*.

The median duration of the active phase of labour was 182.50 (min:70-max:270) minutes for the intervention group and 160 (min:110- max:300) minutes for the SCG. The median duration of the second stage of labour was 30 (min:3- max:65) minutes for the intervention group and 17 (min:3-

max:43) minutes for the SCG group ($p = 0.002$). The duration of second stage of the labour was significantly longer for the intervention group. The total duration of labour was 218 (min:90- max:302) minutes for the intervention group and 180 (min:118- max:337) minutes for the SCG. The difference between the groups in the total duration of labour was statistically significant ($p=0.049$) Fig 2. The median/ mean rank duration of labour for the two groups are shown in Table 2.

Table 3 summarizes the delivery outcomes and the obstetric procedures in the labour process for each group. One-minute Apgar score was 9 (min:8, max:9) for the intervention group and 9 (min:7, max:9) for the SCG ($p = 0.501$). The five-minute Apgar score was 10 for both groups (intervention min:9, max:10; SCG min:8, max:10; $p = 0.708$). The median birth weight of newborns was 3320g (min: 2820, max:3940) and 3445g (min: 2650, max: 4220) in the AHG and SCG, respectively ($p = 0.420$). There was no significant difference between the groups in terms of newborns' median birth weight, and the one- and five-minute APGAR scores. In both groups, 54.4% of the participants had fundal pressure,

80.7% had an episiotomy, and 49.1% had an amniotomy. Table 3 shows there was no significant difference between the groups in the obstetric interventions.

Discussion

This study investigated the effect of the *A. Hierochuntica L.* on the duration of labour. This is one of the first studies to conduct this investigation. There was no change in the duration of the active phase of labour between the case and control groups. Interestingly, the second stage of labour and total labour duration were longer in the group that used the *A. Hierochuntica L.* plant compared to the control group. However, the second stage of labour and total duration of birth were still within normal time limits.

The duration of labour is one of the most important features affecting mothers' satisfaction² In studies from the USA reported the association of a prolonged second stage of labour with chorioamnionitis, third or fourth degree perineal laceration, uterine atony, and admission to the neonatal intensive care unit.^{17,18} Therefore previous studies have tested holistic approaches to shorten duration of labour.¹³⁻¹⁶ Yuksel et al.¹⁶ concluded that breathing exercises are

effective in shortening the second stage of birth. Another study examined the effect of lavender essence aromatherapy on the duration of labour and found it to be ineffective.¹⁵ Programmed physical activity during pregnancy was associated with a shorter first stage and total duration of labour.¹³ Levy et al.¹⁴ evaluated the effect of foot reflexology on the duration of labour and found that it had no effect. In this study, the *A. Hierochuntica L.* was found to be ineffective in shortening the duration of labour. Evidence of the effect of holistic approaches on length of labour is limited. We believe that our study, related to the lack of effect of the plant on the duration of labour has important contributions to obstetric practices of the women who used this plant. Midwives should be aware of the modalities believed to facilitate birth by women. For this reason, informing and helping women with respect to holistic approaches used at birth should be an important component of midwifery care.

Previous studies have evaluated the factors affecting the duration of labour. In the study in nulliparous pregnant women, found that the duration of labour increased as the number of

gestational weeks increased.¹⁹ Another study examined the effect of maternal age on the duration of labour. While maternal age did not affect the first stage of birth, it was found to be one of the most important features in the second stage.²⁰ In this study, there was no difference in the mean maternal age and gestational week, which are baseline characteristics of groups. We can say that the study groups are homogeneous in terms of descriptive characteristics of primiparous women who participated in our study.

Although practices related to the duration of birth have been based on Friedman's curve for the past 60 years, there is no consensus on the normal limits of duration of labour.^{21,22} A recent systematic review evaluating spontaneous delivery time in low-risk women with normal perinatal outcomes has reported that the active phase in nulliparas women varies between 3.7 and 5.9 hours, and the second stage between 14 and 66 min.²¹ In our study, although the total duration of birth and second stage of birth seemed to be prolonged in the group using *A. Hierochuntica L.* compared to the control group not using it, it was not clinically significant, the duration of labour was still within normal

limits. In addition, the lower limit of labour duration was found to be shorter in our study group. This may be due to the rather high rate of use of obstetric procedures in our groups.

Obstetric procedures are routinely used in Turkey.²³ In our study, episiotomy from obstetric procedures was applied to be approximately 80% primiparous women. The use of obstetric procedures in this study is consistent with those of other studies conducted in Turkey. In those studies, the episiotomy rate in primiparous women was found to be approximately 90%.²⁴ In our study, while more than half the group using the plant had fundal pressure applied, this rate was 54.4% in the SCG. When AHG and SCG were compared, fundal pressure application was not statistically different hence, the duration of labour difference between groups is not affected by fundal pressure. Another obstetric procedure is amniotomy. In a recent systematic review, amniotomy was found to be effective in shortening the duration of labour.²⁵ In our study, amniotomy was performed in half the primiparous women. Again, no statistically significant difference was found between the groups in our study in terms of application of

amniotomy. In our study, since obstetric procedures are similar in the groups, the possibility of the effect of these interventions on the duration of birth was minimized. Forceps and vacuum were not used in the hospital where the study was conducted. There are limited studies on women regarding use of *A. Hierochuntica L.* for labour duration, and therefore, further investigation is needed.

Study Limitations

Conducting the study in a single hospital limits the generalizability of the results. However, this bias was minimized as all groups had similar descriptive features in the study. One limitation is that the sample size was small. In addition, continuing to use pharmacological agents in the routine care of participants is another limitation of this study. Further limitation is that is that the routine use of obstetric procedures such as amniotomy, episiotomy, and fundal compression has shortened the duration of birth. We recommend that subsequent studies address the effect of the *A. Hierochuntica L.* in duration of spontaneous labour. Another potential limitation could be the absence of participant blinding. Future studies should include a sham-control

group that would allow participant blinding. Although the study focused on women who use the plant, there was no data on drinking the water in which the plant is immersed. Therefore, the biological activities of the plant's aqueous extract should be assessed in future studies. We acknowledge that the measurements of the active phase and the second phase are not accurate since, for ethical reasons, vaginal examinations were not performed very often. Therefore, a more comprehensive measurement of the duration of the birth stages should be evaluated in future studies.

Conclusion

This study found that *A. Hierochuntica* L. did not affect labour duration in primiparous women. Nevertheless,

women using the plant were likely to recommend this method to other pregnant women. The use of *A. Hierochuntica* L. among pregnant women may not be associated with the duration of labour, as is commonly believed. Given the extremely high rate of interventions, we might consider that women's use of the plant *A. Hierochuntica* L. has psychological effects. The use of the *A. Hierochuntica* L. plant in childbirth may increase women's feels a sense of participation and "control" of part of her care, which may be one way of retaining some agency. Future studies could assess other potential effects of the plant on women's satisfaction and sense of control rather than focus on the duration of labour as well as women drinking the water in which the plant has been immersed.

Disclosure statement

The authors declare no personal conflict of interests or financial conflicts of interest.

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Author contributions

Study design: FO,NŞ; data collection and analysis: HÖ,FO and manuscript preparation: FO,HÖ, NŞ

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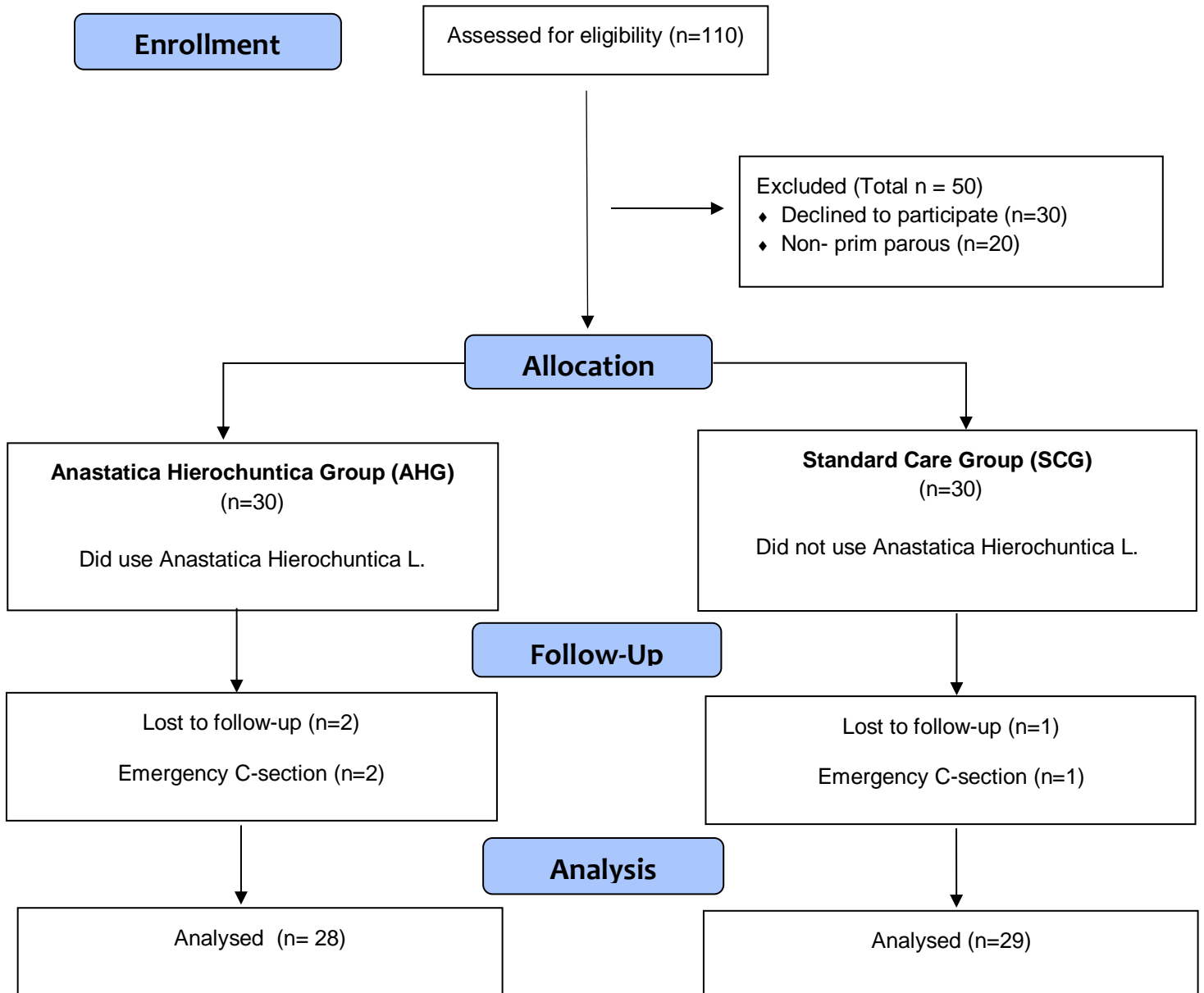


Figure 1. The creation of research groups

Table 1: Descriptive Characteristics

	AHG (n=28)	SCG (n=29)	Total (n=57)	U	p
Gestational age					
Median rank (min-max)	40.0 (38-41)	40 (38-41)		347.00	0.274
Mean rank	39.51	39.74			
Age					
Median rank (min-max)	27 (20-37)	26.5 (20-36)		386.50	0.754
Mean rank	27.79	27.28			
				χ^2 test	
Age group					
≤ 24 years	8 (28.6)	9 (31.0)	17 (29.8)	0.994	0.624
25-29 years	13 (44.8)	10 (33.3)	21 (36.8)		
≤ 30 years	8 (27.6)	11 (36.7)	19 (33.3)		
Employment [n (%)]					
Working	11 (39.3)	11 (37.9)	22 (38.6)	0.011	0.566
Not-working	17 (60.7)	18 (62.1)	35 (61.4)		
Educational level [n (%)]					
≤ 11 years	18 (64.3)	21 (72.4)	39 (68.4)	0.436	0.354
≥ 12 years	10 (35.7)	8 (27.6)	18 (31.6)		

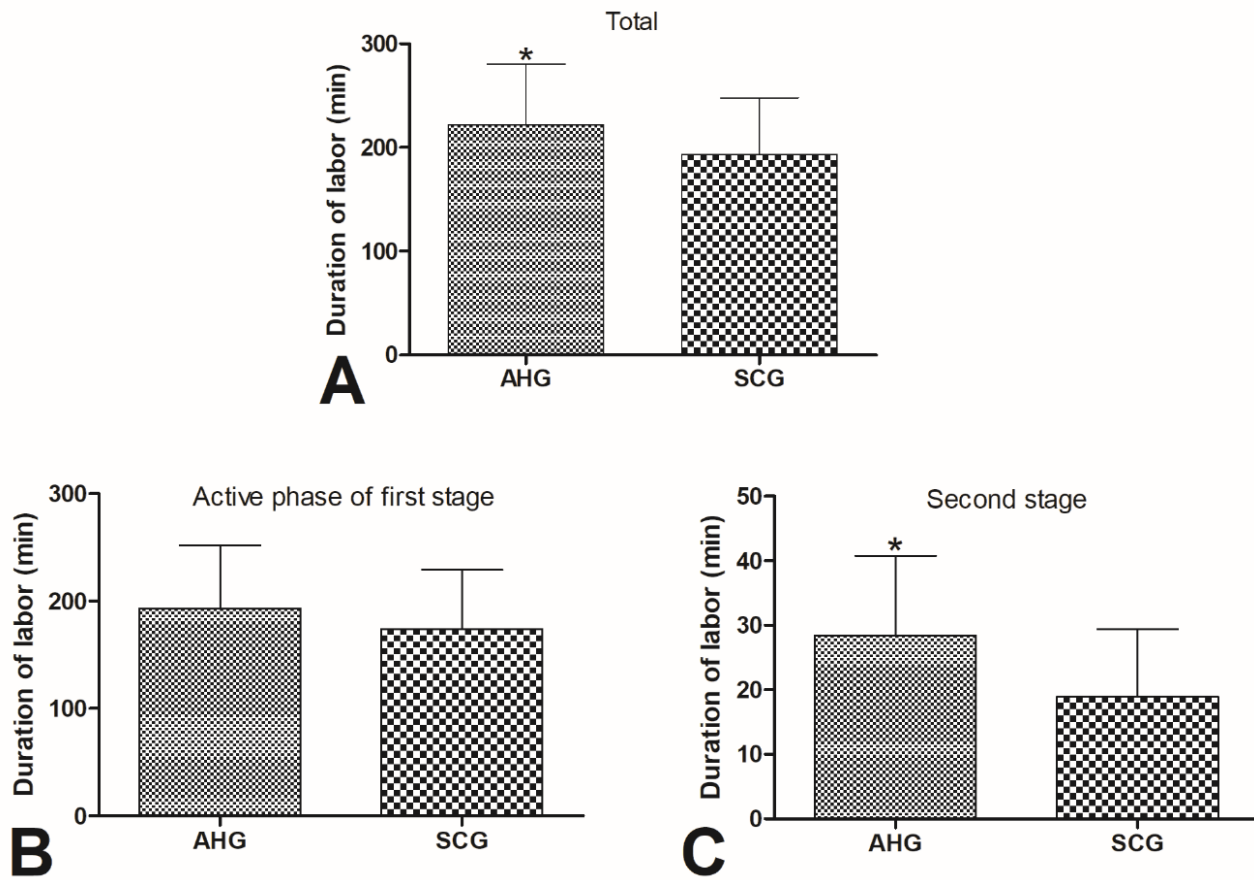


Fig 2. Distribution of duration of labour among the groups

Table 2. Duration of Labour

	AHG (n=28)	SCG (n=29)	U	p
Duration of active phase				
Median (min.– max.)	182.50 (70-270)	160.00 (110-300)	314.5 0	<i>0.143</i>
Mean rank	193.07±59.02	174.20±55.10		
Duration second stage of labour				
Median (min.– max.)	30.00 (3-65)	17.00 (3-43)	213.5 0	0.002
Mean rank	28.42±12.33	18.93±10.48		
Total duration of labour				
Median (min.– max.)	218.00 (90-302)	180.00 (118-337)	282.5 0	0.049
Mean rank	221.50±58.97	193.13±54.75		

Table 3. Delivery Outcomes

	AHG (n=28)	SCG (n=29)	U	p
APGAR 1st min.				
Median (min.– max.)	9 (8-9)	9 (7-9)	372.50	0.501
Mean rank	8.71±0.53	8.65±0.48		
Apgar 5th min.				
Median (min.– max.)	10 (9-10)	10 (8-10)	387.00	0.708
Mean rank	9.65	9.67		
Neonatal birth weight (g)				
Median (min.– max.)	3320 (2820-3940)	3445 (2650-4220)	355.50	0.420
Mean rank	3434.00±380.15	3347±336.29		
Sex of new-born [n (%)]			χ^2 test	
Female	18 (62.1)	32 (56.1)	0.843	0.258
Male	11 (37.9)	25 (43.9)		
Amniotomy [n (%)]				
Yes	15 (53.6)	13 (44.8)	0.436	0.375
No	13 (46.4)	16 (55.2)		
Fundal pressure [n (%)]				
Yes	17 (60.7)	14 (48.3)	0.888	0.250
No	11 (39.3)	15 (51.7)		
Episiotomy [n (%)]				
Yes	23 (82.1)	23 (79.3)	0.073	0.526
No	5 (17.9)	6 (20.7)		



Image 1. Dry curled skeleton



Image 2.a. Hydrated expanded skeleton (side view)



Image 2.b. Hydrated expanded skeleton (top view)