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Effects of Intrapartum Labor Support on Birth outcomes

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Abstract: **Supportive care and childbirth have been connected for all of recorded history. The impact of supportive care on health outcomes, however, has only been investigated over the last few decades. Aim evaluates the effects of intrapartum supportive care on the birth outcome. Subjects and methods; Quasi-experimental design was utilized in Helwan general hospital. A sample of 100 parturient women attended the study setting, were selected, under the inclusion criteria. The tools used for data collection were a structured interview, clinical assessment sheet (Partograph), Visual Analog Scale (VAS) for measuring pain intensity, supportive care during labor tool and summary of labor record Results women in the control group were more likely to use oxytocin augmentation compared to the supportive group that women in the supportive care group were increased mean of cervical dilatation during labor, compared to the control group, with statistical significant differences. The progress was more evident in the supportive group in comparison to the control group during labor. The higher mean intensity of pain was noticed among the control group in comparison with the other group with statistical significant differences. Women in the supportive care group shows the least total mean duration of labor in comparison with the control group, the difference observed is statistically significant. Women in supportive care group had the highest mean Apgar score at the first and fifth minute (9.1±1.1 vs. 7.7±1.1 respectively), with statistical significant difference Conclusion and Recommendations; parturient women should be accompanied by people she trusts and with whom she feels at ease , simple illustrative booklets and pamphlets about supportive care during labor in Arabic language should be prepared and made.**

Keywords: **Childbirth, supportive care, labor, birth outcome.**

1. INTRODUCTION

Childbirth is one of the most extraordinary and meaningful event a woman experience. It is a time that women should feel supported emotionally, physically, and psychologically **(1)**. Fear during labor leads to tension, which reduces the self-perceived control of the parturient woman over her labor process and lead to lower perceived intrapartum care **(2, 3, & 4)**.

Excessive pain intensifies woman's fear and anxiety during labor and stimulates the sympathetic nervous system thus, enhance secretion of some substances like, catecholamines "epinephrine and norepinephrine", eventually leading to more pain, decrease uterine contractility, prolong labor stages, and lead to dissatisfaction with the woman's delivery experience **(5)**.

A woman's reactions to labor pain may be influenced by the circumstances of her labor, including the environment and the support she receives. Support from the midwife may include helping the woman in her wish to avoid pharmacological pain relief or helping her choose among pharmacological and non-pharmacological methods of pain relief **(6)**.

Supportive care may be defined as non-medical care that is intended to ease a woman's anxiety, discomfort, loneliness, or exhaustion, acknowledge her strengths and help her draw on them, and to ensure that her needs and wishes are known and respected. Which include; physical comforting measures as positioning, ambulation, back massage, bladder elimination

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care, reduction of hunger and hydrotherapy**.** Emotional support in labor can be achieved by using effective communication skills and by distracting woman attention from their labor, allowing them to express their feelings, and changing their negative feelings into positive feelings [(7)].

Whereas providing information to women during labor provides both physical and emotional comfort. Information offered on coping strategies for labor during the antenatal period increases self-efficacy, reduces pain and anxiety during the first and second stages of labor, and enhances the ability of pre-partum women to manage their labor as well as their satisfaction with labor [(8).]

Maternity nurses should also, use effective communication skills to inform women about delivery room routines, the labor process, breathing and relaxation interventions performed during labor [(9).]. Moreover, intrapartum advocacy support includes; taking responsibility, protection of privacy, confidentiality, and solution of conflicts is essential to determine the candidate mothers' expectations about labor appropriately [(10)].

Significance of the study

Continuously available labor support that is provided by an intrapartum nurse has been shown as critical to improving birth outcomes. Women who received continuous labor support were more likely to give spontaneous birth, have no identified adverse effects and be satisfied, less likely to use pain medications, had slightly shorter labor periods. In addition, it has been proposed that intrapartum supportive care reduces labor-related fear and anxiety, which in turn has been associated with a decrease in side effects as well as have no identified adverse effects and reduces the rate of oxytocin stimulation [(11)]**.** However, published studies have not provided clear evidence regarding the strength of this effect on labor outcomes. Thus, further research is needed in Helwan, Egypt to study the relationships between intrapartum supportive care and the outcomes of care.

AIM OF THE STUDY:

The aim of this study was to evaluate the effects of intrapartum supportive care on the birth outcome

Study Hypotheses

H1. Intrapartum supportive care reduces perceived pain in the first stage of labor.

H2. Intrapartum supportive care shortens the duration of labor.

H3. Intrapartum supportive care reduces the rate of oxytocin stimulation used in delivery.

H4. Intrapartum supportive care increase the APGAR score

2. SUBJECTS AND METHODS

This study aimed to assess the effects of intrapartum supportive care on the birth outcome.

Research design: Quasi-experimental design was utilized in this study

Setting: The present study was conducted in Helwan general Hospitals. This hospital was selected because it is a teaching hospital and the delivery turnover is satisfactory for the study.

Subjects: The sample size was taken according to statistical equation. Using the Minitab software program for sample size: with confidence interval (CI=90%), Power (80%) .

$$\text{Sample size (n)} = \frac{P(1-P)}{M2} Z2$$

Thus the total recruited sample size was 100 women who randomly divided into two equal groups of 50 as follows:

Study group:

Comprised 50 women who received the intervention program i.e supportive care

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Control group

Comprised 50 women who received the routine care of the hospital.

A representative sampling technique was used and women eligible for recruitment in the study sample if they met the following criteria:

Inclusion criteria:

1. Woman age between 18 and 35 years.
2. Primiparous women.
3. Women who were free from medical or obstetric complications, which would affect the labor progress
4. Those who had no fetal complications
5. Had singleton and live fetus with vertex presentation.
6. Gestational age between 37 and 42 weeks.
7. Cervix is 3-4 cm dilatation.
8. The woman did not receive epidural analgesia.

Exclusion criteria:

1. Woman who had induction of labor.
2. Those who had caesarian delivery

Tools of data collection

Data collection was done through the use of the following tools:

Tool I: A structured Interview Sheet: (Appendix I):

A structured interview sheet was developed by the researcher based on the review of relevant literature to collect data about the following:

Tool I: Socio-demographic data such as: age, occupation, educational level, social class.

Tool II: Partograph

This was used to record the fetal condition, progress of labor as, well as the maternal condition of the woman during labor.

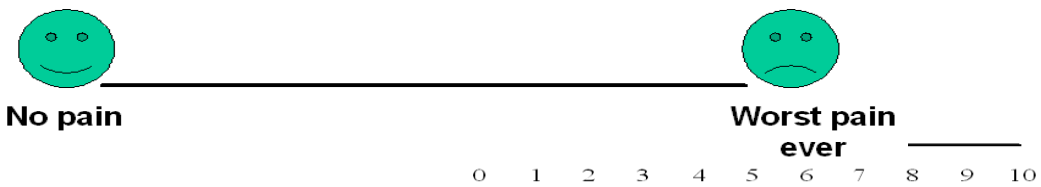
Tool III: Visual Analog Scale (VAS) for measuring pain intensity.

It was originally developed by ***Melzack and Katz (1994)***. It is a self-report device consisting of a horizontal line used for subjective estimation of patient's pain. It comprises 10 point numerical scale, corresponding to the degree of pain with zero representing no pain and 10 representing the worst degree of pain. In between these two opposite ends, words as mild, moderate, severe and very severe pain are assigned to each 2cm distance respectively. Thus, the scoring of the pain, was categorized into 3 grades:

1- Mild pain (1 - 3, 5) : Pricking – pinking – aching

2- Moderate pain (4 -7, 5) : Pressing- cramping -sharp burning

3- Sever pain (8 -10) : Cutting - Killing – suffocating



Measurement	Time	Pain Score
The first (on admission)	When the cervix is 3cm-4cm dilatation.	
The second	When the cervix is 5cm-6cm dilatation.	
The third	When the cervix is 8 cm-9 cm dilatation.	

Concerning the timing for measuring the pain encountered by the woman table 1 shows that it was measured 3 times according to cervical dilatation.

Tool VI SUPPORTIVE CARE DURING LABOR

Parturient women in the study group was never left alone, she was accompanied by the researcher from the beginning of her admission to the labor ward until the end of the second stage of labor. Supportive care activities were applied in the following manner:

The physical support was performed in the form of changing woman position and encouraging her to ambulate "walking, standing, sitting squatting" during the first stage of labor. During second stage of labor**,** the woman was placed in lithotomy position.

The woman was taught to empty the bladder frequently every one hour and should drink oral fruit juice and fluids to provide her with sugar which is a good source of energy.

The researcher applied back massage to the woman to provide her with comfort and relaxation. The researcher trained the parturient woman to perform different levels "Slow paced breathing, modified and patterned paced breathing then spontaneous pushing was allowed during the second stage of labor.

Emotional support

Continues presence of the researcher, guided imagery as well as verbal and non-verbal communication were allowed during the whole period when giving instruction or explaining to woman her labor progress.

Concerning the control group (n=50): the parturient woman received the routine care of the hospital.

Tool V: Summary of Labor Record, this include

Part I: Maternal Outcome:

1. Duration of the first and the second stage of labor.

2. Mode of delivery.

3. Genital tract trauma and other problem encountered.

4. Failure of labor progress.

Part II: Neonatal outcome:

1. Neonatal Apgar score at first minute and after 5 minutes, need for resuscitation and admission to the Neonatal Intensive Care Unit (NICU) were all recorded.

Ethical consideration

All ethical issues were taken into consideration during all phases of the study, the research maintained an anonymity and confidentiality of the subjects. The inclusion in the study was totally voluntary. The aim of the study was explained to every woman before participation and an oral consent was obtained. Every woman was assured that the study maneuver will cause no actual or potential harm to her or her baby and professional help will be provided for her and for her baby whenever needed. Women were notified that they can withdraw at any stage of the research; also they were assured that the
information obtained during the study will be confidential and used for the research purpose only.

- **Content validity and reliability**:

It was ascertained by 3 experts from nursing and medical staff who reviewed the tools content for clarity, relevance, comprehensiveness, and understandable. The reliability was done by Cronbach's Alpha coefficient a numerical test which detected tools had contained comparatively.

- **A Pilot study**:

A pilot study was carried out on 10% of the study subjects to test applicability, feasibility, practicability of the data collection tools arrangements of items and, no changes were done. the pilot study was included in the main study sample.

Field study

Collection of data covered a period of 10 months "from the first of July 2018 to the end of April 2019". After getting the official permission, the pilot testing of the study tools was done and analyzed. The researchers attended labor ward the three hot days (Saturday, Monday, and Wednesday) per week during morning, afternoon and night shifts. Women filled the interviewing questionnaire sheet; general, abdominal and vaginal examinations were done by the on duty physician, assisted with the researchers. The researchers finished the control group first and then interventional group.

Field work

The researcher started to collect data through the following phases:

Preparatory phase:

The researcher undertook a review of past and current available literature relevant to the study topics in order to acquire in-depth theoretical knowledge of the various aspects of the problem. This was done using textbooks, articles in scientific periodicals and magazines, and internet search. This helped in the selection of the pertinent and validated data collection tools.

Interviewing Phase:

The women who fulfilled the inclusion and exclusion criteria, and gave their verbal informed consent to participate were interviewed using the interview questionnaire sheet. This was done individually, ensuring total privacy. The interview took 5 minutes for each nulliparous women**.**

Assessment Phase:

In this phase, immediately after admission to labor and delivery unit, the researcher together with the on- duty physician started regular assessment of the maternal and fetal condition. They carried out general, local abdominal and pelvic examination. All nulliparous women in the two groups were examined “general, local abdominal and PV examination”. All pertinent data were recorded in the partograph, labor progress was observed and recorded as well as the severity of pain as was mentioned before.

Implementation Phase:

All women (n=50) in the study group “supportive care group” received the theoretical and clinical training during their active stage of labor in the labor ward. Individual contact was essential to obtain the maximum benefit of the used method. The control group (n=50) was left to the routine care of the hospital. Maternal and neonatal condition was also noticed and recorded.

Statistical Design:

The collected data was organized, analyzed and tabulated using appropriate statistical significant tests.

Limitations of the study

There was lack of randomization in women assignment of both the study and control groups together with the difficulty encountered during the application of some supportive care activities due to hospital policies and procedures. Moreover, the inability of the researcher to contact women in small subgroups of 3-5 women each increase the period of the clinical work of the study to 10 months.

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3. RESULTS

Table 1: Number and percent distribution of the studied women according to their so socio-demographic characteristics (n=100)

Socio-demographic characteristics	Groups				X^2 Test	p-value
	Supportive (n=50)		Control (n=50)			
	No	%	No	%		
Age:						
▪ < 20	15	30.0	13	26.0	0.45	0.80
▪ 20 +	35	70.0	37	74.0		
Mean± SD	21.3±2.2		22.3±3.6		**F**=1.52	0.47
Education:						
▪ Illiterate	0	0.0	0	0.0	5.98	0.2
▪ Read & write	3	6.0	9	18.0		
▪ Primary	1	2.0	0	0.0		
▪ Preparatory	4	8.0	3	6.0		
▪ Secondary	25	50.0	28	56.0		
▪ University	17	34.0	10	20.0		
Occupation:						
▪ Housewife	42	84.0	44	88.0	0.72	0.70
▪ Working	8	16.0	6	12.0		
Residence:						
▪ Rural	33	66.0	35	70.0	0.71	0.70
▪ Urban	17	34.0	15	30.0		

X^2=Chi-Square test

(F) = ANOVA-test

Table 1 presents the distribution of the studied women according to their socio-demographic characteristics. This table shows that women age ranged between 21 to 35 among the two groups with a mean of 21.3±2.2 & 22.3±3.6 in the supportive and control groups. Almost half of women in supportive (50%) and control groups (56%) had secondary education and the majority were housewives and rural dwellers with no statistical significant differences.

Table 2: Number and percent distribution of the studied women according to need for oxytocin augmentation (n=100)

Need For Oxytocin	Groups				X^2 Test	p-value
	Supportive (n=50)		Control (n=50)			
	No.	%	No.	%		
▪ **Oxytocin augmentation:** ▪ Yes	22	44.0	33	66.0	2.48	0.3
▪ No	28	56.0	17	34.0		
Dose of oxytocin:	**n=26**		**n=33**			
▪ Normal dose	21	80.0	23	69.6	1.13	0.569
▪ Increasing dose	5	20.0	10	30.3		

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Phase for administration: ▪ Active	7	26.9	13	39.3	1.83	0.401
▪ Transition	19	73.1	20	60.6		

X^2=Chi-Square test **(F)** = ANOVA-test

Table 2 reveals that women in the control group were more likely to use oxytocin augmentation compared to the supportive group (66.0% vs. 44.0% respectively). They also, were in need for the greater dose (30.3%) than the supportive care group 20.0%. Moreover, women in the supportive care group were more apt to receive oxytocin during the transition phase compared to those in control groups (73.1% vs. 60.6% respectively).

Table 3: The change in the mean of cervical dilatation during the active stage of labor among the studied groups (n= 100)

Mean cervical dilatation	Groups		F	p-value
	Supportive (n=50)	Control (n=50)		
(AA)phase: (4-7 cm) After 3 hrs.	6.8±0.7	5.7±0.7	8.601	0.005*
4 hrs.	8.3±1.1	6.5±1.1	10.086	0.003*
(AA)phase: (7-9 cm) 5 hrs.	8.9±2.7	7.4±1.5	3.69	0.027*
6 hrs.	9.8±3.6	8.4±2.6	3.74	0.025*

F= ANOVA-test

* = Significant (P < 0.05).

**= Highly Significant (P < 0.001).

AA=Active acceleration

AD= Active deceleration

Table 3 shows that women in the supportive care group were more likely to have an increased mean of cervical dilatation during the active stage of labor, compared to the control group, with statistical significant differences (P < 0.001). The progress was more obvious in the supportive care group than the control groups by the end of AA phase (8.3±1.1 VS. 7.8±1.2 and 6.5±1.1 respectively) and by the end of the AD phase (6.5±1.1 vs. 9.2±2.0 & 8.4±2.6 respectively). Also the differences observed are statistically significant (P < 0.001).

Table 4: The change in the mean descent of the presenting part i.e. station during the active stage of labor among the studied groups (n= 100)

Station progress	Groups		F	p-value
	Supportive (n=50)	Control (n=50)		
(AA)phase: After 1 hr.	-0.9±0.1	-0.9±0.1	0.0	1.00
2 hrs.	-0.9±0.4	-0.9±0.4	0.0	1.00
3 hrs.				

	0.8±1.0	0.1±0.7	9.34	<0.001**
4 hrs.	1.5±0.8	0.3±0.8	23.9	<0.001**
(AD) phase: 5 hrs.	1.5±0.8	1.0±1.3	3.86	0.023*
6 hrs.	1.9±1.1	1.6±1.3	0.85	0.428

F= ANOVA-test AA=Active acceleration

* = Significant (P < 0.05). AD= Active deceleration

**= Highly Significant (P < 0.001).

Concerning the mean descent of the presenting part and its relation to the ischia spine "station" table 4 shows that the progress was more evident in the supportive group in comparison to the control group during the active stage of labor, with statistical significant differences (P < 0.001). Furthermore, women in the supportive group were more likely to have the higher increase after 4 hours (1.5±0.8 vs. 0.8±1.0 & 0.3±0.8 respectively) and 6 hours of the active stage of labor (1.9±1.1 vs. 1.8±1.1 & 1.6±1.3 respectively) compared to the other group.

Table 5: The change in the mean intensity of pain "using the visual analog scale" during the active stage of labor among the studied groups (n= 100)

Mean intensity of pain using the Visual analog scale	Groups				X^2 Test	p-value
	Supportive (n=50)		Control (n=50)			
	No.	%	No.	%		
1st VAS (on admission	7.5±0.8		7.2±1.3		5.89	0.35
2 nd VAS (5-6 cm):	6.1±1.1		7.1±0.6		17.19	<0.001**
3 rd VAS (7-9 cm):	4.4±0.9		8.5±0.7		185.46	<0.001**

F= ANOVA-test

* = Significant (P < 0.05).

**= Highly Significant (P < 0.001).

Concerning the intensity of pain using the VAS, table 5 shows no significant difference among the supportive and control groups before the intervention (7.5±0.8 & 7.2±1.3 respectively). By the second and third measurement of the VAS "after the intervention" the higher mean intensity of pain was noticed among the control group in comparison with the other group with statistical significant differences (P <0.001).

Table 6: The mean duration of the stages of labor among the studied groups (n=100)

Mean duration of the stages of labor	Groups				X^2 Test	p-value
	Supportive (n=50)		Control (n=50)			
	No.	%	No.	%		

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▪ 1st stage "minutes"	314.2±77.1	389.7±110.9	4.4	0.014*
▪ 2nd stage:	71.6±15.8	103.4±29.2	9.45	<0.001**
▪ 3rd stage:	9.8±3.2	9.4±3.9	2.22	0.11
▪ **Total duration:**	395.6±86.7	502.5±138.3	5.45	0.005*

F) ANOVA-test

* = Significant (P < 0.05).

**= Highly Significant (P < 0.001).

Table 6 reveals that women in the control group were more likely to have the longest mean duration of the first and second stage of labor in comparison with the intervention group, with statistical significant differences (P<0.001). Moreover, women in the supportive care group shows the least total mean duration of labor in comparison with the control group (395.6±86.7 vs. 502.5±138.3 respectively), the difference observed is statistically significant (P<0.001).

Table 7: Number and percent distribution of the studied women according to mode of delivery (n= 100)

Maternal outcome	Groups				X^2 Test	p-value
	Supportive (n=50)		Control (n=50)			
	No.	%	No.	%		
Mode of delivery: ▪ NVD	48	96.0	39	78.0	0.14	0.008*
▪ Caesarian section	2	4.0	11	22.0		
Causes of CS:	**N=2**		**N=11**			
	0	100	1	9.3		
▪ Arrest of descent	0	0.0	3	27.2	0.75	0.687
▪ Cervical arrest	2	100.0	4	36.3		
▪ Uterine inertia	0	0.0	3	27.2		
▪ Fetal distress						

X^2=Chi-Square test (*) statistically significant at p<0.05

Table7 illustrates the number and percent distribution of the studied subjects according to their birth outcome. Women in the supportive care group were more likely to have vaginal delivery compared to the control groups (96.0% vs. 78.0% respectively), with statistical significant difference. Cesarean section was mostly encountered among the control group and the main reason was uterine inertia, followed by cervical arrest and fetal distress.

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Table 8: Number and percent distribution of the studied women according to neonatal outcome (n= 100)

Apgar Score	Groups				X^2 Test	p-value
	Supportive (n=50)		Control (n=50)			
	No.	%	No.	%		
Apgar score (1st min):						
▪ Normal (7-10)	50	100.0	45	90.0	5.07	0.28
▪ Mild to moderate asphyxia (4 -6)	0	0.0	3	6.0		
▪ Severe asphyxia (0-3)	0	0.0	2	4.0		
Mean ±SD	8.4±1.1		7.1±1.0		**F**=31.01	<0.001**
Apgar score(5th min):						
▪ Normal (7-10)	47	94.0	44	88.0	3.19	0.527
▪ Mild to moderate asphyxia (4-6)	2	4.0	4	8.0		
▪ Severe asphyxia (0-3)	1	2.0	2	4.0		
Mean ±SD	9.1±1.1		7.7±1.1		**F**=22.76	<0.001**
NICU admission:						
▪ Yes	0	0.0	4	8.0	4.17	0.124
▪No	50	100.0	46	92.0		

X^2=Chi-Square test

(F) ANOVA-test

**= Highly Significant (P < 0.001).

Table 8: demonstrates that women in supportive care group had the highest mean Apgar score at the first and fifth minute (9.1±1.1 vs. 7.7±1.1 respectively), with statistical significant difference (<0.001**).

Moreover, 8.0% in the newborn of the control group was in need for resuscitation and NICU admission compared to supportive care groups (4.0% & 0.0% respectively) but with no statistical significant difference.

4. DISCUSION

According to ***WHO, (2016)*** Millennium Development Goals (MDGS) there are numbers of aims to improve the global maternal health and the care practices that promote, protect and support normal childbirth, of those; the permission for labor to start on its own, avoiding unnecessary disruption of the normal physiological process and providing supportive care to the laboring woman are of utmost importance.

Meanwhile, Evidence-based researches in maternity care utilize the safe evidence based practices to facilitate optimal maternal and neonatal outcomes ***(Grossniklaus, 2017)***. However, in spite of the considerable debates and research that have been ongoing for several years, the concept of "normality" in labor and childbirth is not universal or standardized.

According to a Cochrane review[1], women who received physical and psychological support during labor were more likely to give natural birth. These women were less likely to use analgesics, more likely to be satisfied with their labor experience, and had slightly shorter duration of labor. Their babies were less likely to have a low 5-minute Apgar score. In addition to reducing CS rate, and enhancing the labor progress without adverse effects to both the mother and fetus ***(Gallo, et al., 2018).*** However scarce data are available in Helwan general hospital on this important issue. Therefore, the present study was conducted to compare the effect of maternal supportive care on the labor progress and neonatal outcome.

A according to the results of the present study it was observed that both the study and control groups were matching in all of their socio-demographic characteristics. This can be interpreted in the light that most women attending the above mentioned setting are more or less from the same socioeconomic classes. Generally speaking, this consistent profile of the participants was useful in limiting extraneous factors, which could interfere with the effect of the intended intervention on the progress of labor, maternal and neonatal outcome

The present study result revealed that the studied women were in the age category, of 20 years or more with no statistical significant difference. This is in agreement with ***Akbarzadeh, (2014)*** RCT in Iran, "*who compare the effects of maternal supportive care and acupressure on labor length and infant's Apgar score".* He reported that the mean age of studied women was 25.9 ± 3 years "in the 2 groups" with no statistical significant difference. Similarly ***Isbir & Serçekus (2017)*** study in Turkey who found that the age of women in both groups were 24 years old with no statistical significant difference. This might reflect the same distribution of age of all parturient women, which implies no relation between age and birth outcome.

Concerning the level of education and occupation the present study revealed that the majority of the women in the studied groups were more likely to have secondary school education and being housewives with no statistical significant difference. This finding is matching with the study of ***Wan-Kam, et al., (2015)*** "*who assess women expectation toward labor companion and support".* They showed that women in both study groups were more likely to have secondary school education. In the same line, the study of ***Figen, et al., (2015)*** in Turkey revealed that the majority of the studied women were secondary school graduates with no statistical significant difference.

As for women residence, the present study showed that most of them came from rural areas. This is matching with the study of ***Ghonemy, et al., (2017)*** in Egypt. They found that the majority of the women in both groups came from rural areas with no statistical significant difference. Such similarity between the present result and the above mentioned finding may be explained by the fact that majority of Primipara in rural areas prefer hospital delivery than other setting to ensure safety of mother and newborn.

The present result revealed that women in the supportive care group were less likely to receive oxytocin augmentation during their active stage of labor compared to the control group. This corresponds well with the findings of ***Safarzadeh, et al., (2012)*** study "*about the effect of doula support on labor pain and outcomes"* who found that women in the doula support group had lesser need for oxytocin than the control group. In contrast ***Boiboi, et al., (2016)*** study *"who evaluate the effect of continued support of midwife on the childbirth and labor consequences"* reported that the need for oxytocin were less in both groups. The discrepancies between the present result and the above mentioned findings might be related to the difference in the research design and the inclusion criteria of the sample.

Concerning the progress of labor, women in the study group were more likely to have an increased mean of cervical dilatation during their active stage of labor, compared to the control group, with statistical significant differences ($P < 0.001$). In the same line, ***Ghonemy, et al., (2017)*** found a statistically rapid progress of cervical dilation during the active stage of labor among the supportive care group in contrast to the control group (P=0.000). Likewise, ***Kordi, (2014)*** study in Iran "*who evaluate the effect of continuous support during labor on labor progress in primigravida women",* concluded that women in the supportive care group showed better progress of cervical dilatation.

The present study results indicated that the mean frequency of uterine contractions increased in the supportive care group during the late AA phase compared to control group with statistical significant difference ($P < 0.001$). In the same line, ***Kordi, (2015)*** study in Iran found that the progress of uterine contraction frequencies was better in labor support group than the control group. Such progress of labor explained how this continuous support plays a significant role in decreasing the women stress and playing a role in achieving better coping with the pain produced from the contraction, and this tolerance help the women to accommodate her labor progress and make it in a short period than the control group. This finding is consistent with ***Kashanian, (2017)*** study "*on continuous support provided by midwives during labor and reducing the duration of labor and caesarian delivery".* It is also supported by ***Hodnett, et al., (2013)*** who revealed that women receiving continuous labor support are more likely to give spontaneous birth. In this regard Johnson ***(2003)*** emphasize the unique opportunity of the nurse midwife who could have a powerful effect on the physiologic and psychosocial outcome of the childbirth experience.

According to the postulated concept of the fear tension-pain cycle by Dick-Read, excessive anxiety increases endogenous release of catecholamines that reduces blood flow to and from the placenta, restricts fetal oxygen supply, reduces effectiveness of uterine contractions, and slows labor progress[10]. It has therefore been proposed that coping strategies in labor can reverse this cycle. In the present study, the intensity of pain was lower in the two intervention groups compared to the control group and the difference was statistically significant (P<0.001). Moreover, they exert positive effects on the progress of labor in terms of cervical dilatation, effacement, and the descent of the presenting part as well as increase the chance of spontaneous vaginal delivery. These findings have been similarly reported by [1 & 11].

McGrath and Kennell (2008) study showed that continuous support during labor considerably decrease the need for analgesics and reduce the intensity of labor pain. In the same context, ***Masoudi, et al., (2014)*** RCT found that maternal supportive care and acupressure during labor reduce the intensity of pain and improve the delivery outcome.

The mean duration of the 3 stages of labor constituted the most commonly important outcome of the present study. The current study findings revealed a shorter tendency in the mean duration of labor among women in the supportive care group in comparison with the control group with statistical significant difference. This is in congruence with ***Najaf, et al., (2014)*** study in Iran who found that women in the supportive care and acupressure groups had shorter mean duration of the first and second stage of labor compared to the control group.

In the same line, ***Isbir, (2017)*** RCT showed that the duration of labor was shorter in the supportive care group compared to control group. Similarly, ***Javadi, et al., (2010)*** study evaluate *the effect of continuous support provided by midwives on the duration of the different stages of labor*. They reported that continuous support of women during labor led to shorter duration of the active phase and the second stage of labor, and reduced the rate of cesarean deliveries. Also, ***Hesson, et al., (2019)*** study concluded that using supportive measures can reduce CS and the duration of labor.

On the contrary to the results of the current study, ***Bruggemann, (2007)*** showed that the mean length of the first stage of labor was 2.4 hours in the supported group and 2.8 hours in the control group. Similarly, ***McGrath & Kennell, (2008)*** revealed that no significant difference was observed between the study and the control group regarding the mean length of labor. The difference between the above mentioned studies and the present one might be due to the difference in the inclusion criteria of the sample where the participants belonged to the high social class and they mostly were accompanied by relatives or husbands to the delivery room. Therefore, both groups were highly supported and the effect of nurse's presence could not be truly investigated.

The results of studies such as; those of ***Scott et al***., [30] ***Kashanian et al.,*** [31] ***and Kozhimannil et al.,*** [32] demonstrated that the presence of continuous supportive care during labor decreases the cesarean delivery rate, medical interventions in labor, epidural analgesia, and labor induction. This correspond well with the finding of the present study where the rate of CS was higher in the control group in comparison to the control group with statistical significant difference. In the same line, ***Al-Mandeel, et al., (2013)*** concluded that the majority of the women received companion support had delivered normal vaginal delivery compared to those hadn't received.

Furthermore, ***Akbarzadeh, et al., (2014)*** study, found that the highest rate of natural delivery was present in the supportive care group compared to the control groups and the difference was statistically significant (p=<0.001).. This can explained by the beneficial effect of supportive care on the maternal and neonatal outcome in most RCT researches.

It was interesting to find in the present result that the mean Apgar score at the first and fifth minute was higher in the supportive group than the control groups with statistical significant difference. Also, the newborn in the control group were more vulnerable to have asphyxia, the need of resuscitation and admission to NICU than those in supportive and acupressure groups. This is in accordance with ***Bohren, (2017)*** who concluded that labor support had positive neonatal outcome.

Similar finding was reported by ***Akbarzadeh, (2014)*** who found a significant difference among the three groups regarding the first and fifth-minute Apgar scores (P<0.001). Also, ***Khavandizadeh (2015)*** showed an improvement of Apgar scores at the first and fifth minutes in the supportive group compared to control group.

On the contrary, ***Mafetoni, et al., (2015)*** study *"who evaluate the effect of acupressure on progress of labor"*, found no difference of the newborn Apgar scores between women who received acupressure and the control groups.

5. CONCLUSION AND RECOMMMENDATIONS

▪ Training program is recommended for maternity nurses in order to enhance their knowledge and skills regarding the coping strategies to reduce pain and stress of labor.

▪ parturient women should be accompanied by people she trusts and with whom she feels at ease (such as her friend, husband, or doula)

Simple illustrative booklets and pamphlets about supportive care during labor in Arabic language should be prepared and made

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