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ORIGINAL RESEARCH ARTICLE

Effectiveness of open glottis during second stage of labor on maternal and neonatal outcome among primigravid women- A quasi-experimental study

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Abstract

This study evaluated the effectiveness of the open glottis breathing technique during the second stage of labor among 600 primigravida women, randomly assigned to either an open glottis group (n=300) or a closed glottis group (n=300). Participants in the open glottis group received training via 3D animated videos. Results demonstrated a significant impact on perineal integrity, with 20.7% of women in the experimental group reporting an intact perineum compared to just 1.7% in the control group. Additionally, the open glottis group experienced shorter labor durations and a decrease in severe neonatal asphyxia, as indicated by improved APGAR scores compared to the closed glottis group. Statistical analysis using the χ^2 test revealed a highly significant difference in perineal conditions between the two groups, with a χ^2 value of 65.7 ($p < 0.000$). The study also identified a significant association between maternal age, residence, and income with the reduction of perineal tears ($p < 0.000$). Overall, the findings suggest that the modified open glottis breathing technique effectively prevents perineal trauma, shortens the duration of the second stage of labor, and enhances neonatal outcomes. These results highlight the potential benefits of integrating this technique into labor management practices to improve maternal and neonatal health. *(Afr J Reprod Health 2025; 29 [1]: 15-24).*

Keywords: Modified breath-holding technique; Open glottis; delivery; primigravida, labor; second stage; perineal injury

Résumé

Cette étude a évalué l'efficacité de la technique de respiration à glotte ouverte au cours de la deuxième étape du travail chez 600 femmes primigestes, assignées au hasard soit à un groupe à glotte ouverte (n = 300), soit à un groupe à glotte fermée (n = 300). Les participants du groupe à glotte ouverte ont reçu une formation via des vidéos animées 3D. Les résultats ont démontré un impact significatif sur l'intégrité périnéale, avec 20,7 % des femmes du groupe expérimental signalant un périnée intact, contre seulement 1,7 % dans le groupe témoin. De plus, le groupe à glotte ouverte a connu des durées de travail plus courtes et une diminution de l'asphyxie néonatale sévère, comme l'indiquent les scores APGAR améliorés par rapport au groupe à glotte fermée. L'analyse statistique utilisant le test χ^2 a révélé une différence très significative des conditions périnéales entre les deux groupes, avec une valeur χ^2 de 65,7 ($p < 0,000$). L'étude a également identifié une association significative entre l'âge de la mère, la résidence et le revenu avec la réduction des déchirures périnéales ($p < 0,000$). Dans l'ensemble, les résultats suggèrent que la technique respiratoire modifiée à glotte ouverte prévient efficacement les traumatismes périnéaux, raccourcit la durée de la deuxième étape du travail et améliore les résultats néonatals. Ces résultats mettent en évidence les avantages potentiels de l'intégration de cette technique dans les pratiques de gestion du travail pour améliorer la santé maternelle et néonatale. *(Afr J Reprod Health 2025; 29 [1]: 15-24).*

Mots-clés: Technique d'apnée modifiée; glotte ouverte; accouchement; primigeste; travail; deuxième stade, lésion périnéale.

Introduction

There are over 140 million births annually worldwide. A third of maternal fatalities and pregnancy-related, potentially fatal complications occur during labour, delivery, and the first few days following childbirth. In 2020, approximately 800 women died every day from pregnancy- and childbirth-related avoidable causes. Often, risk factors are present during the labour process and not

at the onset, complicating it further.[1] Fatality during labour has been a cause of maternal and neonatal deaths in low-middle-income countries.[2] Perineal trauma during labour, including lacerations and episiotomies, is a common occurrence that can significantly affect a woman's postpartum recovery and overall quality of life.[3] The potential complications associated with severe perineal injuries, such as third- and fourth-degree tears, which can lead to urinary and faecal incontinence, dyspareunia, and chronic pain, have clinical significance.[4] Vaginal births often lead to some form of trauma to the genital tract, particularly affecting the mucosa and sphincter. A significant concern during normal delivery is maintaining the perineum's integrity to minimise injuries. Many women experience perineal lacerations during childbirth, which are often linked to improper breathing techniques, especially in the second stage of labour.[5,6] Studies have indicated that third- and fourth-degree perineal injuries can significantly increase the risk of urinary and faecal incontinence, dyspareunia, and severe perineal pain, profoundly affecting a mother's quality of life.[7,8] The World Health Organization estimated that approximately 295,000 women die each year from complications related to childbirth. Many of these are deaths linked to preventable factors such as inadequate prenatal care, lack of skilled birth attendants, and poor management of labour complications (https://www.who.int/news-room/fact-sheets/detail/maternal-mortality). The association between perineal injuries and maternal health complications underscores the importance of effective labour management strategies, such as proper breathing techniques, which can reduce perineal trauma and contribute to overall maternal well-being, potentially lowering the risk of adverse outcomes, including maternal mortality.[9] By addressing these issues, healthcare providers can improve both immediate and long-term health outcomes for mothers.

The classical Valsalva manoeuvre has been associated with negative consequences including maternal hemodynamic changes, which result in decreased blood flow to the placenta and lower APGAR. Besides these undesirable outcomes, the classical Valsalva manoeuvre lengthens the second stage of labour and causes damage to the maternal pelvic floor structures through structural and neurologic injuries to the pelvic floor.[10]

The current intrapartum care model apparently introduces unnecessary medical interventions that interfere with the normal physiological process of childbirth.[11] In clinical practice, different techniques and interventions are being developed to counter inappropriate birthing processes by allowing the perineum to stretch slowly, thereby preventing perineal injury. Overall, these techniques enhance the birthing process by minimising fear and tension and ensuring that the woman's muscles, including her perineal muscles, are appropriately prepared for birthing. One such technique, the modified breath holding technique (open glottis), is associated with increased blood circulation and oxygenation to the body, including the pelvic floor.[1,12,13]

To enhance the birthing process, the modified open glottis breath-holding technique is increasingly recommended during the second stage of labour. This method allows for spontaneous pushing in response to the natural urge without timed breath-holding, leading to better maternal and foetal outcomes.[12,14] Women take relaxing breaths during contractions until they feel the urge to push, at which point they inhale deeply, release a bit of air, tuck in their chin, and bear down using their diaphragm.[15] A randomised clinical trial (RCT) in Iran involving 166 nulliparous women demonstrated that the open glottis technique resulted in significantly more intact perineums compared to the Valsalva manoeuvre ($p = 0.002$).[16]

The clinical significance of this technique lies in its ability to reduce perineal trauma, thereby minimising complications such as urinary and faecal incontinence and enhancing overall maternal recovery and quality of life. By promoting a more natural pushing process, this approach can lead to improved outcomes for both mothers and their newborns.[16] This modified (open glottis) breath holding technique is intended to counter the consequences of the classical Valsalva manoeuvre, where the woman is urged to take a deep breath, hold it, and close her lips.[17] This technique positively influences the second stage of labour and yields positive outcomes for the mother and the baby,[12,18] encouraging the mother to believe the technique is the best course of action.[10,14]

The need for this research study arises from the critical role birthing techniques play in determining

maternal and neonatal outcomes. Traditional breath-holding methods, like the Valsalva manoeuvre, are associated with increased perineal trauma, prolonged labour, and lower neonatal APGAR scores. Recent studies suggest that the open glottis technique, which involves exhaling while pushing, can mitigate these adverse effects. For instance, Landy *et al*. (2023) found that using the open glottis technique reduced the risk of severe perineal trauma by 20%. Additionally, deep breathing significantly shortened the duration of the second stage of labour, reducing maternal fatigue without compromising safety.[19] Improved neonatal outcomes have also been observed, with Jones and Brown (2021) documenting higher 1-minute and 5-minute APGAR scores in neonates born to mothers using this technique.[20] These findings underscore the open glottis technique's potential to enhance maternal and neonatal health, justifying the need for further investigation through this quasi-experimental study. A literature review reveals varying outcomes regarding the effectiveness of open versus closed glottis techniques during the second stage of labor. An RCT employing a pragmatic non-blinded approach found no significant differences in pushing effectiveness among 250 women trained in either technique (125 in each group).[21] In contrast, a quasi-experimental study in Egypt with 150 primigravid women (75 in each group) reported that the closed glottis group experienced longer labor duration, while maternal and neonatal outcomes were more favorable in the open glottis group. [22] Additionally, an open-label RCT involving 40 women (20 per group) demonstrated that those taught the open glottis method with vocalization techniques experienced fewer second and third-degree perineal lacerations than the control group.[23] These findings suggest that while some studies indicated no differences in effectiveness, others highlighted the benefits of the open glottis technique in improving outcomes during labour. The purpose of this study is to evaluate the impact of a modified (open glottis) breath-holding technique during the second stage of labour on primigravid women. The evaluation focuses on outcome measures including perineal trauma (episiotomy, and second-, third-, and fourth-degree perineal tears), the duration of labour, and APGAR scores.

Methods

Research design

This study employed a quasi-experimental design involving 300 primigravid women who initially visited the outpatient department (OPD) and subsequently gave birth at the same hospital. Data were collected from these participants to achieve the study's objectives.

Sample and sampling technique

The participants were primigravid women who were in their 35th to 37th week of gestation, who were between 18 and 30 with no medical and obstetrical complications, who had a single foetus, and who were willing to spend time on educational sessions. Those with any other foetal presentation than vertex were excluded from the study. The participants were randomly assigned through simple random sampling to the control and experimental groups. There were 300 participants in each group based on the formula $n = \frac{[(a+b)^2(p_1q_1 + p_2q_2)]}{x^2}$. A power analysis was conducted to ensure the study was adequately powered to detect meaningful effects. With an alpha level of 0.05 and a target power of 0.80, the sample size was determined to be sufficient to detect medium effect size (Cohen's d = 0.5). The women in the experimental group underwent a structured teaching program using video-assisted education on the open glottis technique, whereas the women in the control group received routine education from healthcare providers.

Ethical consideration

The hospital granted consent to perform the study, and the university's Research and Ethics Committee granted ethical approval. In the antenatal OPD, the researcher met women who were there for their regular antenatal follow-up and explained the study's objectives. Participants' confidentiality and data security were ensured through data anonymisation, secure storage in password-protected systems, and restricted access to authorised personnel.

Informed consent was obtained, and the study adhered to ethical guidelines for data protection.

Data collection process and instruments

The first phase of data collection occurred before labour, and the focus was on obtaining demographic data (age, education, income and residence) from primigravid women. The women in the experimental group were asked to stay back after the antenatal checkup for the teaching session. They were educated on the labour process and open glottis technique during the second stage of labour. Four research assistants who were currently serving as midwives were trained on the data collection instruments and teaching module. The intervention was conducted with the help of 3D animated videos during two sessions, each lasting 45 minutes. The control group was asked to perform routine antenatal care after the initial phase of obtaining their demographic data. A panel of national and international nursing experts validated the educational intervention. The experts evaluated the content for relevance, clarity, and appropriateness. Content Validity Index scores were used, with items scoring below 0.80 revised or removed. The expert panel approved the final version. To ensure the intervention's effectiveness, the technique was reinforced among the women once they arrived in the labour room during their latent phase. The research assistants were with the women during the labour process to guide them through the open glottis technique during the second stage of labour. In the control group, the researcher observed the mothers during the second stage of labour without any interference. The second phase of data collection occurred after the women gave birth by assessing the perineum's integrity and APGAR for newborns in both groups. The study instrument consisted of demographic data, an APGAR score sheet, and a standardised scale for measuring perineal integrity (Gabbe *et al.* 2007). According to this scale, perineal laceration is categorised into three degrees. The first degree indicates superficial tears confined to the epithelial layer, the second degree extends into the perineal body excluding the anal sphincter; and the third degree involves both superficial and deep injuries with or without the involvement of the anal sphincter and rectal mucosa. The perineal integrity tool was validated, and the reliability of the tool was tested on 25 women. The Cronbach's alpha value for internal consistency was 0.79.

Data analysis

Data were analysed using IBM SPSS statistical software version 20. Descriptive statistics, consisting of the mean and standard deviation (SD), were calculated for continuous variables and frequency for categorical variables. The chi-square χ^2 test was used to determine whether there was a statistically significant difference between the study and control groups in terms of perineal integrity and duration of labour. The level of significance level was set at 0.05. Potential confounding variables and baseline characteristics of the experimental and control groups were compared and contrasted by ensuring balance between groups at baseline. Any significant differences in baseline characteristics were noted but not included for further statistical adjustments. Chi-square analysis was the primary method used to evaluate group differences

Results

Socio-demographic characteristics

The age of the primigravid women ranged from 18 to 28 years. Among them, 28 (9.3%) and 31 (10.3%) women were between 18 and 20 years in the experimental and control groups, respectively. The majority of women were between 20 and 25 years in both groups (42.7%). Similarly, there were only 26 women (4.3%) between 26 and 28 years in both groups. All the women were from urban, semiurban, and rural areas in both the study and control groups. There was no significance difference between the study and control groups in regard to any of the demographic data. This confirms that both the groups were homogeneous in nature (Table 1).

Effect of modified breathing technique (open glottis) on perineal trauma and performance of episiotomy

The degree of perineal trauma and the performance of episiotomy on mothers in both groups were evaluated. Lacerations were classified as first, second- and third-degree lacerations. The perineum was found to be intact for 62 (20.7%) mothers in the study group compared to five (1.7%) mothers in the control group.

Table 1: Participants' socio-demographic characteristics

S. No.	Parameters	Study Group n = 300		Control Group n = 300		Total n = 600			
		No	Percentage	No	Percentage	No	Percentage	x^2	P Value
1.	**Age in years**								
	18–20 years	28	9.3	31	10.3	59	9.8		
	21–22 years	118	39.3	138	46.0	256	42.7		
	23–25 years	140	46.7	119	39.7	259	43.2	3.57	0.312
	26–28 years	14	4.7	12	4.0	26	4.3		
2.	**Religion**								
	Hindu	96	32.0	81	27.5	177	29.5		
	Muslim	99	33.0	121	40.3	220	36.7	3.71	0.156
	Christian	105	35.0	98	32.7	203	33.8		
3.	**Education**								
	No formal Education	156	52	162	54	318	53		
	Primary	55	18.3	68	22.7	123	20.5		
	Secondary and higher secondary	45	15	37	12.3	82	13.7	3.88	0.423
	Graduate	19	6.3	15	5	34	5.7		
	Professional/Technical	25	8.3	18	6	43	7.2		
4.	**Residence**								
	Urban	17	5.7	20	6.7	37	6.2		
	Semiurban	230	76.7	242	80.7	472	78.7	3.02	0.221
	Rural	53	17.7	38	12.7	91	15.2		
5.	**Income**								
	< 3000	53	17.7	50	16.7	103	17.2		
								0.11	0.745

Table 2: Assessment of condition of perineum among primigravid women

S. No	Condition of Perineum	Study Group		Control Group		$\chi 2$	P Value
		No	Percentage (%)	No	Percentage (%)		
1	Intact	62	20.7	5	1.7	65.7**	0.000
2	Episiotomy	199	66.3	228	76.0		
3	1st degree	34	11.3	43	14.3		
4	2nd degree	3	1.0	5	1.7		
5	3rd degree/with or without anal sphincter damage	2	0.7	19	6.3		

χ 2= 65.7.7**, p=0.000

Regarding the episiotomy, the researchers found that 199 (66.3%) women in the study group had an episiotomy performed compared to 228 (76.0%) women in the control group.

Regarding the degree of the tearing of the perineum, 34 (11.3%) women had first-degree lacerations, whereas three (1.0%) had second-degree lacerations, and two (0.7%) had third-degree tears or extended lacerations to their perineum in the study group. Meanwhile, in the control group, 43 (14.3%) of the women had first-degree tears, five (1.7%) had second-degree tears, and 19 (6.3%) had third-degree tears. The χ^2 test was used to determine whether there was a statistically significant difference

Table 3: Comparison of duration of labour among primigravid women

	Study Group			Control Group			T	P Value
Duration	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**		
First stage	15.9	3.1	300	16.5	2.4	300	2.98	0.003
Second stage	0.4	0.2	300	0.3	0.1	300	4.11	0.000
Third stage	0.1	0.0	300	0.1	0.0	300	0.39	0.700
Total	16.3	3.1	300	16.9	2.4	300	2.72	0.007

Table 4: Distribution of total duration of labour between group

Duration	**Study Group**		**Control Group**	
	Count	**Percentage**	**Count**	**Percentage**
< 14 hours	26	8.7	6	2.0
14–18 hours	270	90.0	203	67.7
> 18 hours	4	1.3	91	30.3

χ 2= 101.66**, p=0.000

Table 5: Frequency and percentage of level of asphyxia at 1 minute among new-borns

Level of Asphyxia	**Study Group n = 300**		**Control Group n = 300**		**Total N = 600**	
	N	**%**	**N**	**%**	**N**	**%**
Mild asphyxia	290	96.7	280	93.3	570	95.0
Moderate asphyxia	6	2.0	12	4.0	18	3.0
Severe asphyxia	4	1.33	8	2.7	12	2.0

Table 6: Frequency and percentage of level of Asphyxia at 5 minutes among newborns

Level of Asphyxia	**Study Group n =300**		**Control Group n = 300**		**Total N = 600**	
	N	**%**	**N**	**%**	**N**	**%**
Mild asphyxia	297	99	288	96	576	96
Moderate asphyxia	3	1	10	3.3	10	1.7
Severe asphyxia	0	0	2	0.7	14	2.3

between the two groups in terms of the perineum's condition. The results revealed a χ^2 value of 65.7** at $p < 0.000$, which was highly significant (Table 2). This implied that the mothers in the study group who received the structured Video-Assisted Teaching Program (VATP) and practised modified breath holding techniques experienced fewer perineal injuries during the second stage of labour compared to mothers in the control group who received only routine care.

Effect of breathing technique (open glottis) on duration of labour

The mean values of the total duration in the experimental and control groups were 16.3 and 16.9, respectively (Table 3). Chi-squares were computed to determine the significance of the association of the duration of labour between the experimental and control groups (Table 4).
A chi-square of 101.66 at $p < 0.000$ was considered highly significant.

Level of asphyxia at 1 minute and at 5 minutes among newborns

The APGAR score sheet was used to compute frequency and percentage distribution of asphyxia neonatorum in the newborns in both the experimental and control groups. Two hundred and ninety (96.7%) newborns in the experimental group and 280 (93.3%) newborns in the control group had mild asphyxia at 1 minute (Table 5). Severe asphyxia was present for four (1.33%) newborns in the experimental group and eight (2.7%) newborns in the control group. Six (2%) newborns in the experimental group and 12 (4.0%) newborns in the control group had a moderate level of asphyxia.

Table 7: Association of condition of perineum with the socio-demographic background of primigravid women

Socio-demographic Variables		Condition of Perineum Intact	Episiotomy	Tear 1	Tear 2	Tear 3	$\chi 2$	P Value
Age	18–20	7 (11.9)	34 (57.6)	14(23.7)	1 (1.7)	3 (5.1)	40.36 **	0.00
	21–22	26 (10.2)	178 (69.5)	41(16)	5 (2)	6 (2.3)		
	23–25	28 (10.8)	204 (78.8)	17 (6.6)	2 (0.8)	8 (3.1)		
	26-28	6 (23.1)	11 (42.3)	5 (19.2)	0 (0)	4 (15.4)		
	Illiterate	36 (11.3)	214 (67.3)	48 (15.1)	7 (2.2)	13 (4.1)	13.95	0.60 2
Education	Primary	12 (9.8)	91 (74)	14 (11.4)	1 (0.8)	5 (4.1)		
	Secondary and higher secondary	11 (13.4)	60 (73.2)	8 (9.8)	0 (0)	3 (3.7)		
	Graduate	2 (5.9)	29 (85.3)	3 (8.8)	0 (0)	0 (0)		
	Professional/Technical	6 (14)	33 (76.7)	4 (9.3)	0 (0)	0 (0)		
Residence	Urban	2 (5.4)	26 (70.3)	7 (18.9)	0 (0)	2 (5.4)	37.87 **	0.00 0
	Semiurban	52 (11)	357 (75.6)	47 (10)	5 (1.1)	11 (2.3)		
	Rural	13 (14.3)	44 (48.4)	23 (25.3)	3 (3.3)	8 (8.8)		
Income	Rs. 1000–3000	13 (12.6)	50 (48.5)	27 (26.2)	4 (3.9)	9 (8.7)	42.34 **	0.00 0

None of the newborns had problems related to asphyxia. Similarly, at 5 minutes, very few newborns had severe to moderate asphyxia, and 297 (99%) newborns had mild asphyxia (Table 6)

Association of socio-demographic data and degree of perineal tear

The association of the mother's age, education, residence, and income to the reduction of perineal tear was calculated. The results showed that the association was significant ($p < 0.000$) (Table 7)

Discussion

An important aspect of managing labour is the protection of the perineum. The variable that affects the perineal outcome in labour is maternal pushing during the second stage of labour. Our study attempted to identify the effect of the modified breath holding technique (open glottis) on the outcome of perineal injury in primigravid women. The results showed that women who engaged in the VATP and practised the modified breath-holding technique with the researcher's reinforcement during the second stage of labour experienced fewer perineal injuries compared to the control group, which received routine care. This suggests that educating primigravid women about recommended exercises during the antenatal period through VATP can lead to reduced perineal injuries and enhance the overall labour experience. Similar findings indicated that mothers who received antenatal education had better labour outcomes than those who did not.[21,22] The findings of another study comparing spontaneous pushing using the modified breath-holding technique to the Valsalva manoeuvre aligned with ours. They indicated that women who utilised spontaneous pushing with the modified technique had intact perineums; fewer first, second, and third-degree tears; and fewer episiotomies.[5,23]

In contrast, the analysis of research papers on the effects of the Valsalva manoeuvre on maternal and foetal wellbeing revealed that it resulted in maternal distress, foetal distress, and perineal trauma as compared to spontaneous pushing.[18] Many researchers have reported that Valsalva type pushing results in both maternal and foetal complications during the second stage of labour.[12,14,18,24] Thus, the modified breath holding technique is safe for use during the second stage of labour because the risks of maternal and foetal compilations are minimal. Our study reported that there is a significant association between demographic variables and perineal tear. In this study, we found a significant association between the age, residence, and income

of women with perineal tear ($p < 0.000$). We found similar results in another study.[25,26]

Recent studies seemed to suggest that there is an association between race and risk of perineal lacerations during labour.[27,28] A retrospective study reported that Filipino and Chinese women face a higher risk of third- and fourth-degree perineal lacerations compared to other women.[28] Another study reported that Asian women faced a higher risk of perineal lacerations. Indian and Filipino women were reported to experience more anal sphincter lacerations.[29]

Breathing exercises during the second stage of labour entail taking deep breaths and letting them out. By performing this exercise, the muscles of the pelvic floor are mobilised, and the abdominal muscles are actively engaged and oxygenated.[30]

Regarding the total duration of the second stage of labour among participants, the present research showed a substantial statistical difference between the study and control groups. The duration of the second stage of labour was short among the women in the study group compared to control group because of the effect of the breathing technique.[7,31] Studies conducted to determine the effect of the breathing technique on the extent of the damage to the perineum found that the duration of the second stage of labour was often longer for women who did not carry out spontaneous pushing.[32] Researchers have also indicated that spontaneous pushing with open glottis pushing leads to a significantly shorter mean duration of the second stage of labour. Whereas closed glottis pushing has been linked to an extended duration of the second stage of labour, open glottis has been linked to a shorter duration (5–10 min) as well as improved neonatal and mother outcomes.[33] Another study on pregnant women found that the duration of the second stage of labour was approximately 13 minutes shorter for the spontaneous breathing group compared to the Valsalva pushing group.[29,26] These findings paralleled the present study's findings. The breathing technique has a significant influence on the duration of labour, as evidenced by the statistical significance of the differences between the experimental and control groups in various research studies.[34]

The APGAR scores in the present study indicated a significant difference between the two groups during the first minutes of birth. However, the fifth-minute scores did not show a significant difference.[24] A study conducted to determine the effects of the pushing technique on the mother and the foetus in second stage of labour found that the neonate mean APGAR score was significantly higher in the spontaneous pushing group than the Valsalva pushing group.[35,36] However, studies have reported no significant difference in the fifth-minute mean APGAR scores between the spontaneous and Valsalva pushing groups.[37]

In other studies, newborns had the highest APGAR score at the first and fifth minutes. None of them had foetal complications in the experimental groups with spontaneous breathing and pushing during the first stage of labour.[35] Additionally, only one study obtained a better five-minute APGAR score and a better umbilical artery pH in the open glottis group.[24,33]

It is evident from literature that educating women on exercises, specifically breathing exercises, during the antenatal period assists them in coping effectively with the delivery process. By performing these exercises, perineum injuries can be reduced and a smooth delivery can occur.

In most developing countries, pregnant women do not seek prenatal checkups, and if they register, they do not come for follow-up visits. This may cause primigravid women to miss the opportunity to be adequately prepared for the delivery experience, leading to unpleasant experiences during the labour process. In fact, it is common to find unprepared mothers keeping their bodies rigid. This rigid posture is often associated with premature pushing efforts before the cervix is fully dilated. It can lead to various levels of perineal trauma. This necessitates the need for primigravid women to be properly prepared during the antenatal period for safe and natural childbirth.

Strengths and limitations

The major strength of the study is the study design and the standardised instrument used to collect the data. One of the limitations is that the study was conducted only in one hospital, so its generalisability is limited. Future research should aim to replicate the study in various settings to enhance the findings' external validity.

Implications for practice

During the second stage of labour, the modified (open glottis) breathing approach reduces foetal asphyxia and requires less intervention and perineal tearing. Thus, it is essential to incorporate evidence-based intrapartum care policies into national programs and healthcare services. It is also important to establish a supportive atmosphere for carrying out these recommendations. In particular, healthcare providers should adopt an evidence-based practice mindset shift

Conclusion

Vaginal deliveries are typically accompanied by genital tract damage and lacerations. These experiences are frequently linked to both immediate and long-term health issues. During the second stage of labour, using recommended pushing techniques like the modified breath holding technique (open glottis) can enhance maternal and foetal outcomes and support maternal well-being, aligning with various Sustainable Development Goals. By promoting education and access to these techniques, we can enhance the childbirth experience for women and contribute to broader health outcomes.

Conflict of interest

The authors declare that they have no conflict of interest with the material presented in this paper..

Consent for publication

The authors consent to publish the research

Contribution of authors

Conception and design of the study: EJP; VS
As Data collection: EJP,VS
Data analysis and interpretation: VS,DR,FF,GAM
Statistical analysis: VS;DR,FF,GAM,SHSA
Manuscript preparation: EJP, VS, DR,FF
GAM,SHSA

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