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CLINICAL ARTICLE

Evaluation of healthcare professionals' understanding of eponymous maneuvers and mnemonics in emergency obstetric care provision ☆

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ABSTRACT

Objective: To evaluate whether eponymous maneuvers and mnemonics taught for the management of shoulder dystocia, vaginal breech delivery, and uterine inversion were remembered and understood in practice. *Methods:* A questionnaire was distributed to obstetricians and midwives collecting information about the HELPERR and PALE SISTER mnemonics. Three extended matching questions evaluated participants' knowledge of the correct maneuvers, with their matching eponyms, used in the management of shoulder dystocia, vaginal breech delivery, and uterine inversion. *Results:* Of the 112 participants, 90% were familiar with the HELPERR mnemonic, with 79% using it in their practice. Of those who used it, only 32% could correctly decipher it ($P = 0.032$). PALE SISTER was mostly unfamiliar. The percentages of correct maneuvers used for managing shoulder dystocia, breech delivery, and uterine inversion were 84.6%, 58.3%, and 28.6%, respectively. However, the eponyms were correctly matched to their maneuvers in only 33.3%, 14.3%, and 0% of cases, respectively ($P < 0.01$). *Conclusion:* The meanings of the mnemonics for obstetric emergencies were frequently recalled incorrectly. This, together with the poor correlation between knowledge of maneuvers and their eponyms, limits their usefulness and indicates that teaching should focus on learning without relying on mnemonics and eponyms.
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1. Introduction

Shoulder dystocia, vaginal breech delivery, and uterine inversion are uncommon obstetric emergencies. According to the Norwegian birth registry, the incidence of shoulder dystocia is approximately 0.68% [1] and that of uterine inversion is approximately 1 in 19 998 vaginal births [2]. Shoulder dystocia can feel like an "obstetric nightmare" for both women and healthcare workers [3]. It is associated with significant maternal and fetal morbidity, including postpartum hemorrhage and fetal brachial plexus injury [4]. Following concerns about the safety of vaginal breech deliveries [5], planned cesareans for breech presentation have led to a reduction in the amount of exposure that healthcare professionals have to the former type of delivery.

Because of the rarity and potential serious outcomes of these emergencies, "skills and drills" simulation training is used to prepare practitioners for their occurrence. The Royal College of Obstetricians and Gynaecologists recommends that all maternity staff should take part in at least 1 such simulation training for shoulder dystocia annually [6]. A demonstrated improvement in outcomes has been shown following the introduction of such training for shoulder dystocia [7].

Many of the maneuvers used in these emergencies have eponymous names, of which "McRoberts" is a known example for shoulder dystocia [8]. For the management of vaginal breech delivery and uterine inversion, eponyms such as "Mauriceau–Smellie–Veit" and "O'Sullivan" [9] are used to describe the required maneuvers, with no well-known mnemonics cited to aid the operator. This could overcomplicate learning and make remembering the correct techniques difficult in an emergency.

The main skills training courses in the UK are Advanced Life Support in Obstetrics (ALSO), produced by the American Academy Of Family Physicians [10]; Managing Obstetric Emergencies and Trauma (MOET), produced by the Advanced Life Support Group [11]; and the Practical Obstetric Multi-Professional Training (PROMPT) course [12]. Because of the inherent difficulty in remembering eponyms and the cascade of procedures, mnemonics have been devised to aid memory for the management of shoulder dystocia. Those promoted are the HELPERR mnemonic and PALE SISTER. The HELPERR mnemonic is described as follows: H, call for help; E, evaluate for episiotomy; L, legs (McRoberts maneuver); P, suprapubic pressure; E, enter maneuvers; R, remove the posterior arm; R, roll the patient [10]. PALE SISTER stands for the following: P, prepare—have a plan; A, assistance; L, legs (McRoberts

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maneuver); E, episiotomy; S, suprapubic pressure; I, internal rotation (Woods); S, screw maneuver (reverse Woods); T, try recovering posterior arm; E, extreme measures (try again, fracture clavicle, Zavanelli, symphysiotomy); R, repair, record details, relax [11].

The aim of the present study was to evaluate whether eponymous maneuvers and mnemonics were remembered, understood, and applied by qualified doctors and midwives of all levels.

2. Materials and methods

A cross-sectional study was conducted at 2 hospitals in London, UK: King's College Hospital and Croydon University Hospital. Participants were asked to complete an anonymous questionnaire without the use of references to aid them and without conferring with colleagues. They were either completed directly in front of the person collecting the sheet (no time restriction for completion was applied) or returned later. Questionnaires were distributed to qualified doctors and midwives who were currently practicing in obstetrics. Ethics approval was not required because there was no patient involvement and the study was conducted as part of a voluntary assessment of service and training delivery by staff. Participation was entirely voluntary and participants were informed and verbally consented to taking part. No identifiable information was provided.

There were 4 separate pages in the questionnaire. On the first page, practitioners were asked whether they were doctors or midwives, what grade they were, how many years of experience they had, the length of time since their last skills training session, and in what country they had completed their core training in obstetrics.

Participants were then asked whether they had heard of the HELPERR and the PALE SISTER mnemonics and whether they used them in practice. They were subsequently asked to complete the mnemonic, having been given the first letter of each part.

On the subsequent pages, there were 3 extended matching questions. Each page was divided into 2 halves. The top half listed descriptions of maneuvers used in shoulder dystocia, vaginal breech delivery, and uterine inversion. Some were correct and some were incorrect. Each maneuver on the list was assigned a number. Next to each, the practitioners were asked to circle whether a maneuver was correct or incorrect, or whether they were unsure.

The bottom half of each page consisted of a list of eponyms used to describe the maneuvers in the top half of the page. Participants were asked to match the correct maneuver with the corresponding eponym by placing the assigned number for each maneuver next to the name. The numbers could have been used once, more than once, or not at all. Participants were asked to place an "X" next to any eponym that did not match any description from the top half of the page.

The Shapiro–Wilk test was used to test for normality of data. Number of years of experience and number of months since last training session were expressed as mean ± SD because they were normally distributed. All other continuous variables were expressed as median (interquartile range) because they were not normally distributed. The Spearman correlation coefficient was used to determine correlation between number of months since the participants' last training session and number of years of experience versus HELPERR, shoulder dystocia, breech delivery, and uterine inversion scores. The Wilcoxon signed-rank test was used to compare the score in correctly identifying the maneuvers with the score in correctly matching the names of maneuvers. The Mann–Whitney *U* test was used to compare doctors' versus midwives' performance. The χ^2 test was used to compare the number of people who stated that they used the HELPERR mnemonic with the number who could recall it correctly. The χ^2 test was also used to compare the ability to correctly identify the HELPERR mnemonic in relation to the responder's employed position (e.g. consultant, specialist registrar, midwife). Statistical analysis was completed using SPSS version 20 (IBM, Armonk, NY, USA). $P < 0.05$ was considered to be statistically significant.

3. Results

Of the 120 questionnaires distributed to practitioners who were identified as eligible, 112 were completed. Of the participants, 61 were midwives, 42 were doctors, and 9 did not state their profession. Mean time since last skills training was 8.6 ± 7.8 months and mean prior experience was 8.4 ± 8.2 years (Table 1). There was no significant correlation between any of the scores achieved and number of months since last skills training (number of months since training vs HELPERR score, $P = 0.065$; vs shoulder dystocia maneuvers, $P = 0.270$; vs shoulder dystocia eponyms, $P = 0.553$; vs Breech maneuvers, $P = 0.163$; vs breech eponyms, $P = 0.281$; vs uterine inversion maneuvers, $P = 0.909$; vs uterine inversion eponyms, $P = 0.269$). There was a significant negative correlation between number of years of experience and percentage score for correctly identifying the HELPERR mnemonic (coefficient −0.273; $P = 0.004$). There was a significant correlation between number of years of experience and percentage score for correct identification of uterine inversion maneuvers (coefficient 0.269; $P = 0.005$). There was a significant difference ($P < 0.01$) between the number of maneuvers that were appropriately identified as correct and those whose associated eponymous name was correctly recognized (Table 2). Doctors performed significantly better than midwives in breech and uterine inversion ($P < 0.01$) but no better in shoulder dystocia (Table 3).

With regard to the HELPERR mnemonic, 90.2% of participants reported that they were familiar with it, with 78.6% using it in practice. However, of those who said that they used it in practice, only 31.8% could correctly complete the whole mnemonic ($P = 0.032$). There was a progressive deterioration in recall of the correct word representing each letter of the mnemonic, from 96.6% for "H" to 40.9% for "R" (Fig. 1). There was no association between the employed position (e.g. consultant, specialist registrar, midwife) of the respondent and the ability to correctly identify the HELPERR mnemonic ($P = 0.659$).

PALE SISTER was familiar to only 5 people, with only 1 correctly identifying what the letters stood for; therefore, no meaningful statistical comparisons could be made.

4. Discussion

The present study showed that, despite practitioners stating that they remembered mnemonics for obstetric emergencies, the meanings

Table 1
Summary of participants' grade and experience.[a]

Position	Number	Time since last skills training, mo	Previous experience, y
Junior midwife	50 (44.6)	8.5 ± 7.6	5.2 ± 5.4
Senior midwife	11 (9.8)	6 ± 6.2	17.2 ± 7.8
Senior house officer	9 (8.0)	6.1 ± 3.7	1.6 ± 0.4
Specialist registrar	22 (19.6)	12.4 ± 10.4	7.3 ± 3.6
Consultant	11 (9.8)	5.2 ± 6.2	17.9 ± 6.7
Not stated	9 (8.0)		
Total	112 (100)	8.6 ± 7.8	8.4 ± 8.2

[a] Values are given as number (percentage) or mean ± SD.

Table 2
Comparison of correctly identified maneuvers with correctly matched eponyms.[a]

Obstetric emergency	Correctly recognized maneuvers, %	Correctly recognized eponyms of maneuvers	*P* value[b]
Shoulder dystocia	84.6 (76.9–92.3)	33.3 (11.1–55.6)	<0.001
Breech delivery	58.3 (50–75)	14.3 (0–42.9)	<0.001
Uterine inversion	28.6 (0–71.4)	0 (0–0)	<0.001

[a] Values are given median (interquartile range) unless otherwise indicated.
[b] Wilcoxon signed-rank test.

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