

# Personal Preference of Mode of Delivery. What do Urogynaecologists choose? Preliminary Results of the DECISION Study

## Die persönliche Wahl des Geburtsmodus. Wie entscheiden sich Urogynäkologinnen und Urogynäkologen? Erste Ergebnisse der DECISION-Studie

### Authors

Julia Bihler<sup>1</sup>, Ralf Tunn<sup>2</sup>, Christl Reisenauer<sup>1</sup>, Jan Pauluschke-Fröhlich<sup>1</sup>, Philipp Wagner<sup>1</sup>, Harald Abele<sup>1</sup>, Katharina K. Rall<sup>1</sup>, Gert Naumann<sup>3</sup>, Markus Wallwiener<sup>4</sup>, Sara Y. Brucker<sup>1</sup>, Markus Hübner<sup>1</sup>

### Affiliations

- 1 Department of Women's Health, University Hospital of Tübingen, Tübingen, Germany
- 2 Department of Urogynaecology, German Pelvic Floor Centre, St. Hedwig Hospital, Berlin, Germany
- 3 Department of Gynaecology and Obstetrics, Helios Hospital Erfurt, Erfurt, Germany
- 4 Department of Gynecology and Obstetrics, University Hospital of Heidelberg, Heidelberg, Germany

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mode of delivery, elective caesarean section, risk stratification, postpartum recovery, pessary therapy

### Schlüsselwörter

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### Correspondence

Markus Hübner  
Centre for Women's Health, University Hospital of Tübingen  
Calwerstrasse 7, 72076 Tübingen, Germany  
[markus.huebner@med.uni-tuebingen.de](mailto:markus.huebner@med.uni-tuebingen.de)

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### ABSTRACT

**Introduction** Currently, almost every third child in Germany is delivered by caesarean section. Apart from straightforward and clear indications for caesarean section which account for approx. 10%, the large proportion of relative indications in particular needs to be critically reviewed if the current C-section rate is to be effectively lowered. It is more than doubtful, however, whether this can be a realistic goal in Germany, especially in the context of international developments. All studies on this topic demonstrate that the personal attitude of the obstetric team has a considerable influence on the pregnant woman's personally preferred mode of delivery. Therefore, in the first part of the DECISION study, the personal preferences of urogynaecologists were evaluated regarding the best suitable mode of delivery.

**Material and Methods** All 432 delegates at the 9th German Urogynaecology Congress in Stuttgart in April 2017 were invited to participate in an online questionnaire study. The questionnaire was developed especially for this study.

**Results** Of the 432 registered delegates, 189 (43.8%) participated in the survey. 84.7% (n = 160) of the study participants would prefer a vaginal delivery, in an otherwise uncomplicated pregnancy. Only 12.2% (n = 23) opted for an elective caesarean section. The main reasons stated for this decision were concerns about incontinence (87.5%) and pelvic floor trauma (79.2%). Amongst the study participants, 83.6% would like to be part of a risk stratification system presented in the questionnaire which, with the aid of specific parameters, is intended to allow early identification of a population with a high risk of developing pelvic floor disorders. There was also great interest in postpartum pelvic floor recovery (97.8%) and an associated optional pessary therapy (64.4%). The type of delivery already experienced (vaginal delivery vs. primary caesarean section) and parity also reveals to have a significant influence on the personal preferred mode of delivery as well.

**Conclusions** Urogynaecologists prefer vaginal delivery for themselves. There is a great interest to participate in a risk stratification process in order to approach childbirth in an individualized and risk-adapted manner.

## ZUSAMMENFASSUNG

**Einleitung** Derzeit kommt in Deutschland fast jedes 3. Kind durch Kaiserschnitt zur Welt. Neben eindeutigen Indikationen zur Sectio, die ca. 10% ausmachen, ist besonders der große Anteil an relativen Indikationen kritisch zu hinterfragen, wenn die derzeitige Sectiorate nachhaltig gesenkt werden soll. Ob dies in Deutschland ein realistisches Ziel ist, ist vor allem vor dem Hintergrund der internationalen Entwicklungen mehr als fraglich. Alle Untersuchungen zu diesem Thema zeigen hierbei, dass die persönliche Einstellung des betreuenden geburtshilflichen Teams einen erheblichen Einfluss auf die individuelle Wahl des Geburtsmodus der Schwangeren hat. Im ersten Teil der DECISION-Studie wurde daher die persönliche Präferenz von Urogynäkologinnen und Urogynäkologen bezüglich des für sie optimalen Geburtsmodus evaluiert.

**Material und Methoden** Alle 432 Teilnehmer/innen des 9. Deutschen Urogynäkologie-Kongresses in Stuttgart im April 2017 wurden eingeladen, sich an der onlinebasierten

Fragebogenstudie zu beteiligen. Der hierzu herangezogene Fragebogen wurde eigens für diese Arbeit konzipiert.

**Ergebnisse** 189 (43,8%) der 432 registrierten Teilnehmerinnen und Teilnehmern partizipierten. 84,7% (n = 160) der Studienteilnehmer bevorzugten bei unkomplizierter Schwangerschaft eine Spontangeburt. Nur 12,2% (n = 23) präferierten eine Entbindung durch eine elektive Sectio caesarea. Als Hauptgründe hierfür wurde die Sorge vor einer Inkontinenz (87,5%) oder einem Beckenbodenschaden (79,2%) angegeben. An einem im Fragebogen vorgestellten System der Risikostratifizierung, welches ermöglichen soll, anhand von spezifischen Parametern ein Hochrisikokollektiv für Erkrankungen des Beckenbodens frühzeitig zu erkennen, würden 83,6% teilnehmen. Auch das Interesse an einer gezielten postpartalen Rückbildung (97,8%) und an einer hiermit verbundenen optionalen Pessartherapie (64,4%) war groß. Es zeigten sich zudem signifikante Einflüsse der Art der bereits erlebten Geburt (Spontangeburt vs. primäre Sectio) und der Parität auf den zukünftig präferierten Geburtsmodus.

**Schlussfolgerung** Urogynäkologen/innen bevorzugen die vaginale Entbindung. Es besteht eine große Bereitschaft, an einer Risikostratifizierung teilzunehmen, um risikoadaptiert und individualisiert vorgehen zu können.

## Introduction

The high rates of caesarean section in Germany are not only unsatisfying for midwives and obstetricians, but are also leading to debates and efforts in politics and society to reduce the number of caesarean sections [1, 2]. Although, according to the 2016 Annual Report of the Federal Statistical Office of Germany, the rate of caesarean sections has remained relatively stable at 32% in the years between 2010–2014 [3], there are considerable regional variations which do not have only organisational, structural and demographic reasons, but there also seems to be a heterogenic approach to the so called “relative indications” for a caesarean section [4, 5].

There is little need for discussion about the “hard indications”, which account for less than 10% of C-section indications [6]. Moreover, there should only be little to no regional variation with respect to these indications. In the grey area of “relative indications”, which accounts for 90% of procedures, it is unclear to what extent the decision is based on rational, medical reasons, and to what extent the personal attitude and expectations, not only of future parents, but especially of the attending obstetric team, comprising of midwife and obstetrician, play a role in the decision.

This is where the DECISION study comes in. Concealed behind this acronym is “Die persönliche Wahl des Geburtsmodus – Eine prospektive, online-basierte, informative Fragebogenstudie” (“The personal preference of birth delivery mode – A prospective online informative questionnaire study”).

More than 20 years ago, Al Mufti et al. asked 282 British gynaecologists which mode of delivery they would prefer – in an otherwise uncomplicated singleton pregnancy. In that survey, 31% of the female doctors and 8% of the male doctors (for their wives)

opted for caesarean section [7]. For 80%, the main reason for this decision were concerns about pelvic floor trauma [7].

Was this a representative population? Have we today, more than two decades later, gained new insights which would make us vote differently?

The first aim of this study was to ask a population of urogynaecological specialists about their personal preferred mode of delivery for themselves or for their partner and to evaluate the reasons for a caesarean section if stated as an option.

The online questionnaire provided information about the female pelvic floor, the effects of epidural anaesthesia, the impact of postpartum pelvic floor recovery and the option of a pessary therapy to arouse and analyse the interest in these options. Another aim of the survey was to explain the idea of a risk stratification system in obstetrics, asking about the interest in such system and test whether the participants would change their answers if additional information would be provided.

## Material and Methods

### Questionnaire development

Due to the absence of validated German questionnaires about the personal choice of delivery, an informative online survey was developed in cooperation with the German Pelvic Floor Centre in Berlin (author: R. Tunn). The aim was to gather parameters surrounding the choice of delivery, while also providing additional information about these specific issues. The main idea was to create an exchange between expert knowledge, provided in the questionnaire, and the answers, provided by participants. Another reason for this approach was to test, how additional information

would change the decisions of the participants, without manipulating them. The anonymously collected demographic data is presented in ► **Table 1**, while the individual questions and issues of the survey are presented in ► **Table 2**.

### Description of the study cohort

After an intensive trial period and the approval from the local Ethics Committee of the University of Tübingen (91/2017BO2), all 432 delegates at the 9th German Urogynaecology Congress in Stuttgart in April 2017 were invited to take part in this first phase of the DECISION study. This first cohort was intended to represent a population interested specifically in pelvic floor disorders and who had urogynaecological experience.

All delegates at the congress were included, regardless of gender, whether or not they already had children, whether or not they were pregnant, or they were planning to become parents. The male participants were invited to answer the questions as if they would decide for their (future) wife.

The only exclusion criteria were being under legal age (n/a in this cohort) and language difficulties when completing a German questionnaire.

### Modes of invitation

During registration at the venue, the delegates at the congress received the invitation to participate in the study, together with the web address of the online survey. During the congress, invitations were repeatedly given via the projection media. Invitations printed in post-card form were distributed throughout the congress hall as well. After the congress, all delegates were informed by email about the possibility of participating in the study, in case they had not done this so far.

### Software and statistics

The software Enterprise Feedback Suite Summer 2017 by the Questback company in Cologne was used as a survey tool. Data security was confirmed by the German Federal Office for Information Security in the form of an ISO 27001 certificate. Data were stored anonymously; IP address tracking by the authors was not possible.

Statistical analysis was performed using SPSS Version 23.0 for Microsoft Windows (IBM Corp., Armonk, NY, USA). A descriptive analysis of the data was performed using absolute and relative frequency distribution. A multi-regression analysis was used to evaluate multiple answers. To verify the independence of various influencing factors, or variables (age, sex, delivery mode of previous births, effect of risk stratification, parity, training level, subspecialty) on the preference of delivery mode, the Student's t-test,  $\chi^2$  test, McNemar's test and Welch's test with post-hoc analysis (Games Howell, due to homogeneity of variance) were used appropriately. A significance level of  $p < 0.05$  was considered. A power calculation was performed prior to the start of the study, determining a sample size of at least 155 answered questionnaires (McNemar-Test) in order to achieve the appropriate statistical power of 0.8.

The DECISION study is registered at [clinicaltrials.gov](http://clinicaltrials.gov) (NCT03131830).

► **Table 1** Demographic data.

Demo-graphic data	<ul style="list-style-type: none"> <li>▪ Age</li> <li>▪ Sex</li> <li>▪ Profession (physician, physiotherapist, midwife, medical assistant, etc.)</li> <li>▪ Specialty (gynaecology, urology, visceral surgery)</li> <li>▪ Level of training (intern, specialist, senior physician, chief physician)</li> <li>▪ Subspecialty (urogynaecology, obstetrics or other)</li> <li>▪ Are you expecting a child?</li> <li>▪ How many children do you have?</li> <li>▪ Delivery mode of the previous born children</li> </ul>
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► **Table 2** Questions and issues addressed.

Questions	<ul style="list-style-type: none"> <li>▪ Preference of mode of delivery</li> <li>▪ Who makes this decision?</li> <li>▪ Wish for EDA</li> <li>▪ Willingness to participate in a risk stratification</li> <li>▪ Interest in postpartum recovery, best performed by whom?</li> <li>▪ Interest in postpartum pessary therapy</li> </ul>
Issues addressed	<ul style="list-style-type: none"> <li>▪ Questionnaire survey by Al-Mufti et al. [7]</li> <li>▪ Explanations regarding EDA and options for pelvic floor protection</li> <li>▪ Risk stratification based on the UR-CHOICE study [8]</li> <li>▪ Postpartum pessary therapy</li> </ul>

## Results

### Demographic characteristics of the study population

189 (43.8%) of the 432 registered congress delegates took part in the study. Of these, 66.7% (n = 126) were female and 33.3% (n = 63) were male. 177 (93.7%) participants worked as physicians, the remaining participants n = 12 (6.3%) as physiotherapists, nurses, medical assistants, students or had a different background. Given the low case number of the non-physician participants, a subanalysis of the non-physician cohort and group interaction between professions was not performed.

n = 170 (96.0%) participants work in the field of obstetrics and gynecology, 142 (83.5%) are specialized in urogynaecology, n = 36 (21.2%) focus on perinatology and n = 29 (17.1%) in other subspecialties. Multiple answers could be given. Regarding further training, n = 21 (11.9%) were interns, n = 31 (17.5%) specialists, n = 87 (49.2%) senior physicians, and n = 38 (21.5%) chief physicians.

### A high rate in favour of spontaneous delivery

Given the fact of an uncomplicated pregnancy, 84.7% (n = 160) prefer a vaginal delivery, 12.2% (n = 23) opt for an elective caesarean section and 3.2% (n = 6) were uncertain about their preference.

► **Table 3** Main reasons for a primary caesarean section.

When favouring a primary caesarean section, the following reasons were mentioned (multiple answers possible):	Relative number (%)	Absolute number (n =)
Concerns about urinary or faecal incontinence	87.5	21
Concerns about pelvic floor trauma or prolapse	79.2	19
Concerns about potential harm to the child	54.2	13
Concerns about perineal tear	50	12
Fear of restrictions on sexual activity	41.7	10
Concerns about a vacuum or forceps delivery	33.3	8
Concerns about a secondary caesarean section	25	6
Concerns about an episiotomy	25	6
Scheduling issues	16.7	4
Fear of pain during labor	12.2	3

► **Table 4** Reasons against an EDA.

The decision against an EDA for pain relief during labour was selected for the following reasons (multiple answers possible):	Relative number (%)	Absolute number (n =)
This would disrupt childbirth as a natural course of events and more commonly results in secondary C-section	41.7	15
Concerns about having a needle introduced into the back	30.6	11
Concerns about complications during placement	19.4	7
Other reasons, including:	38.9	14
▪ EDA is not necessary		8
▪ Preference for alternative methods of pain relief		2
▪ Results in a protracted delivery		2

The main reasons to prefer a primary C-section are shown in ► **Table 3**.

The question about who should make the decision about the optimal mode of delivery, 32.8% (n = 62) suggested the pregnant woman herself, 20.1% (n = 38) would like to decide as a couple, and 40.2% (n = 76) preferred to make the decision in consultation with their gynaecologist or midwife.

### Epidural anaesthesia

41.3% (n = 78) would appreciate the option to get an epidural anaesthesia for pain relief during labor. On the other hand, 18.5% (n = 35) would not request an epidural, and 40.2% (n = 76) stated “unsure”. The main reasons against epidural anaesthesia are shown in ► **Table 4**.

### Risk stratification

In this part of the study, the participants received information about a risk stratification system, such as the UR-CHOICE study as an example. This study was designed to identify pregnant women, who are at high risk to develop pelvic floor disorders, by analyzing various parameters before and pregnancy [8]. The majority of participants, 83.6% (n = 158), would like to be part of a similar program in order to be identified ahead of the decision regarding mode of delivery.

After this information was given, the participants were asked again about their preferred delivery mode, assuming that they have a low risk for developing a pelvic floor trauma.

Analyzing the results within the group of urogynaecologists, the additional information about the principles of risk stratification did not result in a significant change (vaginal delivery 84.7% [n = 160], caesarean section 12.2% [n = 23], “unsure” 3.2% [n = 6] before receiving information about risk stratification versus vaginal delivery 84.7% [n = 160], caesarean section 10.1% [n = 19], “unsure” 5.3% [n = 10] after receiving the information, p = 0.316).

### Questions regarding the postpartum phase

Almost all participants, 97.8% (n = 185), were aware of the importance attached to postpartum pelvic floor recovery. Only one person did not show any interest in this topic whereas three people were unsure. 7.4% (n = 14) wished for a midwife to be responsible for the follow-up care during puerperium, 38.6% preferred a physiotherapist during this time, and 47.1% (n = 89) opted for both, a midwife and a physiotherapist. 4.8% (n = 9) declared to manage the postpartum period on their own without any support.

At least 64.6% (n = 122) were interested in a postpartum pessary therapy which is not established yet.

► **Table 5** Influencing factors on the preferred mode of delivery.

		Preferred mode of delivery given an uncomplicated pregnancy		
		spontaneous	primary caesarean section	unsure
The study shows that...	all participants	84.7%	12.2%	3.2%
... a spontaneous delivery is preferred significantly more often after a previous vaginal delivery ( $p < 0.001$ )	previous vaginal delivery	96.9%	2.1%	1.0%
	no previous vaginal delivery (excluding nulliparous women)	75.0%	25.0%	0.0%
...after a previous primary C-section, a further C-section is preferred significantly more often ( $p = 0.001$ )	already delivered by primary C-section	75.0%	25%	0.0%
	not yet delivered by primary C-section (excluding nulliparous women)	96.0%	3.0%	1.0%
...nulliparous woman in compare to biparous woman prefer a primary C-section as mode of delivery significantly more often ( $p = 0.004$ )	nulliparous women (and their partners)	70.0%	21.7%	8.3%
	biparous women (and their partners)	94.9%	5.1%	0.0%

### Analysis of influencing factors (variables)

Examining the demographic data, different influencing factors have been identified that impact the choice of delivery mode. For instance, the delivery mode previously experienced, has a significant impact on the preferred mode of delivery in future. The participants who had already experienced a vaginal delivery opted significantly more often for the same mode of delivery and vice versa.

Furthermore, it was determined that parity has an impact when choosing the preferred mode of delivery. A post-hoc analysis demonstrated a significant difference ( $p = 0.003$ ) between the group of nulliparous women (and their partners) and biparous women (and their partners). Couples with two children were more likely to choose a vaginal delivery compared to childless couples. ► **Table 5** shows the factors significantly influencing the preferred mode of delivery.

### Gender-specific differences

No significant effect of gender on the preference of delivery mode was found in this population. 81% ( $n = 102$ ) of women were in favor of a vaginal delivery, 16% ( $n = 20$ ) opted for an elective caesarean section, and 3% ( $n = 4$ ) were unsure. Meanwhile 92% ( $n = 58$ ) of men preferred a vaginal delivery for their partners, 5% ( $n = 3$ ) would rather choose a primary caesarean section, and 3% were unsure ( $p = 0.087$ ).

Neither age nor level of training nor sub-speciality plays a significant role in influencing the preference of delivery mode in this population.

## Discussion

The vast majority of urogynaecologists prefer a vaginal delivery in an otherwise uncomplicated pregnancy. This is the outcome of the preliminary analysis of the DECISION study, in which the delegates at the 9th German Urogynaecology Congress in April 2017 in Stuttgart represent the first cohort. There is great interest to participate in a risk stratification process to find out the optimal,

individualised delivery mode for themselves. Furthermore, almost all participants are aware of the importance of the postpartum phase with regard to postpartum pelvic floor recovery and prevention of future pelvic floor disorders.

Medical experts have long been debating about “the best mode of delivery” [9, 10]. Whereas before the turn of the millennium, an elective C-section was the exception, this option is being more and more addressed and discussed, hence it has become “socially acceptable” throughout the years [11]. Decreasing rates of morbidity and mortality associated with caesarean section, in combination with safer anesthesiologic techniques, have turned elective C-sections into a notable alternative [11].

In 2005, Wu et al. asked 1479 members of the American Urogynecologic Society (AUGS) and of the Society for Maternal-Fetal Medicine (SMFM), in other words, urogynaecologists and obstetricians, in the USA whether they would carry out a C-section upon request without any medical indications. 65.4% answered this question in the affirmative. However, there was a significant difference observable between urogynaecologists and obstetricians (80.4% of the AUGS members vs. 55.4% of the SMFM members,  $p < 0.001$ ) [12]. 45.5% of the AUGS members would prefer a caesarean section for themselves, while only 9.5% of the SMFM members opted for this option [12].

The study by Al-Mufti et al., which has already been mentioned, and which addresses the question about the personal preference of delivery mode, revealing that in 1996 17% of those questioned (31% of the women, 8% of the men) would prefer a C-section for themselves, has been repeated several times [7]. In 2002, Bergholt et al. discovered, by conducting a survey involving Danish gynecologists, that a significantly lower percentage, only 1.1%, preferred a C-section, given an uncomplicated pregnancy and an estimated fetal weight of 3 kg. Even with an estimated fetal weight of 4 kg, the percentage merely increased to 3.3% [13]. A recently performed study asked again 242 gynecologists in Great Britain. In this study, 10% preferred an elective C-section for themselves, or rather their partners. Between the years 2006 and 2011, the mode of delivery within this population did not differ

from that of the general British population ( $p = 0.9$ ) [14]. In another study, conducted by Gonen et al., involving Israeli gynecologists, a similar percentage, more precisely 9%, preferred C-sections. 45% of those supported the women's autonomy to choose elective caesarean and about half of them were in favor of educating women about their right to choose [15].

Prevalence studies, which have shown significant correlations between disorders of the female pelvic floor and parity, led to focusing on the question how to prevent pelvic floor disorders [16, 17]. When considering the advantages of an elective caesarean section in regard to postpartum stress urinary incontinence [16–18] it should also be considered that these advantages seem to last only in the short term [19]. In long-term prevalence studies, it is shown that variables, which are independent from the mode of delivery, such as age and body mass index (BMI), have also a considerable impact [16]. The fact that the female pelvic floor can be altered by pregnancy itself, which can lead to symptoms like urinary incontinence, even before the delivery, needs to be taken into account as well [20].

Thus, it is not the vaginal delivery in general that affects the levator ani muscle in its function as the muscular component of the female pelvic floor, but rather a set of risk factors that can put the M. levator ani and its subcomponents at a higher risk to injury under certain circumstances [21–23]. When considering the long-term effects that an injury to the levator can have on the female pelvic floor and which can be associated with an increased prevalence of incontinence and pelvic organ prolapse, it is important to specify which population is more likely to be negatively affected by vaginal delivery compared to the average population [16, 21, 23, 24]. However, this implicates that it could be possible to motivate the majority of parents-to-be in their wish to deliver their children in a natural way and thereby effectively lower the rate of caesarean sections.

This principle of risk stratification is based on the identification of individual risk factors which are significantly more specific than the rough differentiation between vaginal delivery and caesarean section. Glazener et al. were able to demonstrate that women who are 35 years and older at the time of their first delivery had a significantly higher risk of developing pelvic organ prolapse [25]. It was also possible to identify high-risk groups of women who have an almost twice as high prevalence of developing prolapse within a period of 20 years after childbirth if, for example, they are less than 1.60 m in height and delivered a baby with an estimated fetal weight of more than 4 kg (24.2 vs. 13.4%, OR 2.06; 95% CI 1.19–3.55) [26]. Modifiable risk factors which result in disorders of the female pelvic floor, such as body mass index (BMI), were also highlighted [27].

In their presentation of a scoring system for risk stratification, Wilson et al. indicate that they might be able to identify these high-risk populations at the prepartum stage in the future, thus being able to counsel parents-to-be individually [8]. This would provide gynaecologist with a tool to counsel their patients more evidence-based.

In the present study, 83.6% ( $n = 158$ ) of the surveyed congress delegates agreed to take part in such a system of risk stratification. These figures emphasize the importance of these future prospects.

The preliminary results of the DECISION study clearly illustrate that, even within an expert population of urogynaecologists, spontaneous delivery is still the preferred mode of delivery. The days of the general question “C-section vs. vaginal delivery” give way to an individualised, risk-adapted approach.

One of the strengths of this work surely is the high proportion of participants of 43.8%, meeting the power calculation of sample size criteria. The presentation of the demographic characteristics of the surveyed population shows a representative cross-section of the participants of the congress.

Nevertheless, it should be mentioned that the urogynaecological cohort represents only a small, subspecialised population; and a differentiation between different professional groups was not possible due to small case numbers.

Experts know the surgical risks of a caesarean section, such as infection, abnormal wound healing and thromboembolic complications. In contrast, the risks of spontaneous delivery or a vaginal surgical approach are also known. Aspects surrounding the safety of mother and child are also playing a vital role. All these points may be included in the process of decision-making.

This is the first cohort of the DECISION study; five others are to follow which will include non-professionals, i.e. currently pregnant women, in addition to other professional groups, in order to place the results into a wider context of our society. It will be interesting to see to what extent the various cohorts will add up to form an overall view.

## Conclusions

The vast majority of the male and female delegates at the 9th German Urogynaecology Congress prefer a vaginal delivery for themselves or their partners, assuming an otherwise uncomplicated pregnancy.

In today's time of high C-section rates, it surely is a positive development. Even more encouraging is the fact that most of the participants would be interested in taking part in risk stratification systems in order to find individualized ways in the field of urogynaecology and obstetrics, thus questioning relative indications for C-sections. Moreover, such an individualized approach would result in a better protection of high-risk pregnancies, as well as in a greater support for women, opting to deliver spontaneously. The DECISION study is intended to contribute to that aim. In future, urogynaecology as well as obstetrics should continue to work closely together [28].

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### Conflict of Interest

The authors declare that there is no conflict of interest. The results have been submitted in abstract form for the 10th Annual Meeting der European Urogynaecological Association (EUGA) in Barcelona 10/2017.

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