

# Risk of non-resumption of vaginal sex and dyspareunia among cesarean-delivered women

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## ABSTRACT

**Context:** Many women have postpartum sexual dysfunction. The mode of delivery is an important determinant. **Aims:** To calculate the risk ratio of non-resumption of vaginal sex and dyspareunia during the postpartum period among cesarean-delivered women. **Settings and Design:** This large multisite study was conducted in 13 selected hospitals in Pune District during 2017-19. **Methods and Material:** A total of 3,112 women (half cesarean delivered and half vaginally) were interviewed by trained health workers using a structured questionnaire. Women were interviewed at 4 weeks, 6 weeks, and 6 months. **Statistical analysis used:** Chi-square test was applied. A risk ratio with a 95% confidence interval was calculated. **Results:** At 6 weeks, the risk ratio of non-resumption of vaginal sex was significantly high among cesarean-delivered participants (1.14). Cesarean-delivered women had a lesser risk ratio of dyspareunia at both follow-ups (0.59, 0.49). Even at 6 months, about one-third vaginally delivered women had dyspareunia. The proportion of women non-resuming vaginal sex gradually decreased from 6 weeks to 6 months. The proportion of women having dyspareunia also decreased from 6 weeks to 6 months following childbirth. Residence in the rural area and cesarean delivery were the significant determinants of an early resumption of vaginal sex. Dyspareunia was significantly high among vaginal delivered than cesarean. About 25% of women continued to have dyspareunia up to 6 months. **Conclusions:** A large number of women suffer from dyspareunia; hence antenatal and postnatal care should include some counseling and management about the resumption of sex and dyspareunia.

**Keywords:** Cesarean, dyspareunia, early resumption of sexual activity, postpartum, vaginal

## Introduction

Abstinence by couples during late pregnancy and immediately after delivery is entrenched in the culture. Women desire resumption of sex but there may be pain or apprehension about pain. Openly communicating about sexuality particularly among women is usually taboo in India and may have poor response

during obtaining information.<sup>[1,2]</sup> The woman for her sexual problems may not seek health advice or seek at a late stage. Several women in the postpartum period face problems like postcoital bleeding, dyspareunia, pain on orgasm, loss of vaginal lubrication, etc.<sup>[3]</sup> These problems may affect the resumption of sexual activities by women. Early postpartum resumption of vaginal sex may decrease the probability of extramarital affairs which reduces the risk of sexually transmitted infections like HIV/AIDS.<sup>[4]</sup> On the other hand, it may result in unwanted pregnancy if practiced without contraceptives. Furthermore, longer postpartum abstinence may be perceived as being against

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Received: 17-12-2020

Revised: 21-02-2021

Accepted: 12-03-2021

Published: 30-07-2021

### Access this article online

#### Quick Response Code:



Website:  
www.jfmpc.com

DOI:  
10.4103/jfmpc.jfmpc\_2482\_20

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**How to cite this article:** Doke PP, Vaidya VM, Narula AP, Patil AV, Panchanadikar TM, Wagh GN. Risk of non-resumption of vaginal sex and dyspareunia among cesarean-delivered women. J Family Med Prim Care 2021;10:2600-7.

natural human sexuality and may result in endangering family relationships and health, especially in the era of HIV/AIDS.

Sociodemographic factors like age, occupation, education cultural beliefs as well as obstetric factors including parity, use of family planning, are associated with early postpartum resumption of vaginal sex.<sup>[5]</sup> Type of delivery and perineal trauma during childbirth is associated with postpartum sexual problems. Cesarean delivery thwarts perineum damage and consequently prevents postpartum sexual dysfunction. A study documented a better score for sexual function among women with cesarean delivery than those who have had a vaginal delivery.<sup>[6]</sup> Conversely, vaginal delivery is not associated with anesthesia and abdominal incision which engenders some apprehension or fear among the couples. Substantial sexual disruption may affect the relationship between spouses but only 15% of postpartum women with sexual problems consult health consultants.<sup>[3]</sup> There is a differential occurrence of these problems among women delivering vaginally and cesarean. In the context of the increasing proportion of cesarean deliveries in India, the study was considered necessary.<sup>[7]</sup> The study was conducted in collaboration with the Directorate of Health Services, Government of Maharashtra.

### Objectives

1. To calculate the risk ratio of not resuming vaginal sex among cesarean delivered women during postpartum 6 months.
2. To calculate the risk ratio of dyspareunia among cesarean-delivered women during postpartum 6 months.

### Material and Methods

#### Study design

It was an observational cohort study.

#### Setting

The study was conducted in Pune district, India. As per the last census (2011), the population of the Pune district is 9,429,408. The urban population in the district is 60.99%, including two Municipal Corporations, Pune (PMC) and Pimpri-Chinchwad (PCMC). There are six medical college hospitals, one civil hospital, one women hospital, five sub-district hospitals, and 20 rural hospitals (Community Health Centers) in the district. Both the corporations have one tertiary care hospital each and many small hospitals. There are many private non-teaching hospitals in the district. The criterion of selection of study centers was a non-teaching government hospital conducting more than five cesarean sections per month. Additionally, one government and one private teaching hospital were selected. Thus, the study was conducted in 13 selected hospitals in the district. These hospitals included five tertiary care hospitals (two medical college hospitals, two corporation hospitals, and one civil

hospital) and eight secondary care hospitals. The details are given in Figure 1. The blocks from which the hospitals were selected are given in Figure 2.

Women delivered from 1<sup>st</sup> September 2017 to 31<sup>st</sup> March 2018 were enrolled. For each site, a team comprising at least one obstetrician and one staff nurse was identified as the site coordinator team. The site coordinators were trained about the objectives of the project, data collection, and quality of data. Women were called to the hospital where they were delivered or any hospital included in the study for follow-up. History of resumption of sexual intercourse and dyspareunia was obtained by personal interview by site coordinators during follow-up visits at the end of 4 weeks (within 6 weeks), 6 weeks (within 8 weeks), and 6 months (within 9 months) after delivery. Women not coming for follow-up visits were contacted by healthcare workers (trained auxiliary nurses) at their homes requesting them to come for follow-up. Special follow-up visits/checkup camps were arranged to have a maximum response. Information from the women not attending even the camp and not available in-home visits (temporarily migrated) was collected by telephonic interviews by medico-social workers/coordinators. The analysis was carried out in of 2018–19.

### Participants

All women, delivered by cesarean section in the above-mentioned hospitals, during the enrolment period were eligible. Women who were residents of the Pune district were included. Women not understanding English, Marathi, or Hindi and having a psychiatric problem were excluded. Age and parity-matched women delivered vaginally in the same hospitals during that enrolment period were included in the comparison group with a 1:1 ratio. Same inclusion and exclusion criteria were applied for inclusion in the comparison group.

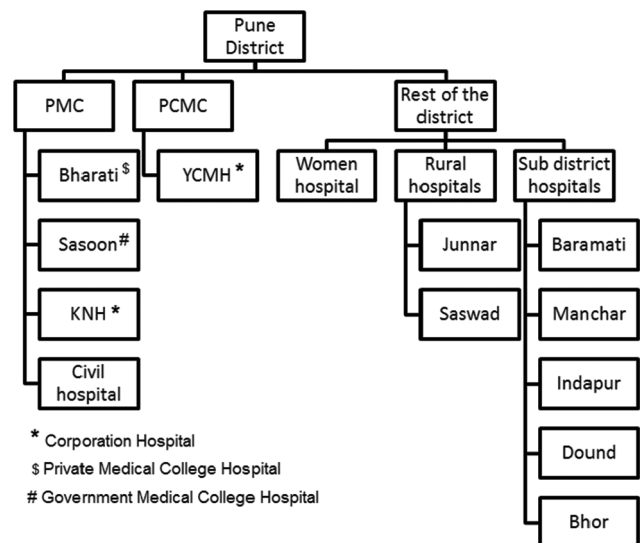


Figure 1: Type and place of selected hospitals in Pune District, India, 2017-18



**Figure 2:** Blocks having participating hospitals in Pune District, India, 2017-18

## Variables

The independent variable was the mode of delivery. The dependent variables were qualitative and included the resumption of vaginal sex after delivery and dyspareunia. Responses to these two variables were dichotomized as “yes” or “no.” Resumption of sexual intercourse was defined as having the first penetrative vaginal sex after childbirth. Early resumption of sex was defined as within 6 weeks postpartum. Women who resumed sexual activity were asked about dyspareunia. Variables capturing sociodemographic and obstetrics information were nominal, ordinal, or discrete quantitative variables.

## Data sources/measurement

The study tools comprised formats for enrolment, 4 weeks, 6 weeks, and 6 months follow-up. They were validated, pre-tested, interview schedule, containing both open and close-ended questions. The enrolment schedule included mode of delivery, sociodemographic variables like education, occupation, parity, etc.

## Sample size

This study was a part of a larger project in which cesarean delivered and vaginally delivered women, 1,556 in each group were enrolled and followed for comparative assessment of post-partum morbidity. We stopped at the end of the month after enrolling desired numbers. The authors confirmed the adequacy of sample size for this study by following way; we calculated sample size separately detecting difference between the mode of delivery for non-resumption of vaginal sex and dyspareunia at 4 weeks, 6 weeks, as well at 6 months.<sup>[5,8]</sup> The largest sample size required for detecting a difference of 5% dyspareunia among cesarean delivered and vaginally delivered at 6 months,<sup>[8]</sup> 95% confidence interval, and 80% power 1,521 women in each group.

## Statistical methods

The data was analyzed using, Statistical Package for the Social Science (SPSS) Version 25.0. “Chi-Square test” was applied to evaluate the association between the variables. Participants lost to follow-up and those who did not answer the questions were not considered for calculation. The risk ratio with a 95% confidence interval was calculated.  $P$  value  $< 0.05$  was considered as statistically significant.

## Ethics approval

The study was approved by Government of Maharashtra and by Institutional Ethics Committee vide letter number IEC/2017/34 Date: 31 Aug 2017. The authors obtained written informed consent for participation and publication from all the study participants.

## Results

A total of 3,112 women were enrolled in the study and their mean age was 23.96 (SD = 3.72) years. The number of women followed in each group till 6 months is given in Figure 3. A small proportion of women did not answer the questions related to the resumption of vaginal sex and dyspareunia. At 4 weeks, no woman resumed sex. The overall comparison between women who resumed sexual intercourse early and who did not resume early with sociodemographic context is given in Table 1. At 6 weeks, there was no association between the resumption of vaginal sex or dyspareunia and sociodemographic and obstetric factors excepting early resumption was higher in the rural area (44.77%) than the urban area (38.91%).

At 6 weeks among followed women, almost all (98.48%) were breastfeeding and there was no difference between the two modes of delivery as well between intact perineum and injured perineum (episiotomy or perineal tear). At 6 weeks, risk ratio of not resuming vaginal sex among the cesarean group was 1.14 (95% CI; 1.08–1.22;  $P < 0.0001$ ) compared to vaginally delivered women. Non-resumption of sex among breastfeeding and non-breast-feeding women as well between intact perineum and injured perineum did not differ; the overall resumption of vaginal sex was 44.95%. The risk ratio of dyspareunia among cesarean section delivered was 0.59 (95% CI; 0.51–0.69;  $P < 0.0001$ ) compared to vaginally delivered. Among vaginally delivered women there was no difference between an episiotomy or perineal tear and intact perineum. Overall dyspareunia among vaginally delivered was about 50%.

At 6 months, 99.31% were breastfeeding their infant and there was no difference between the groups. The risk ratio of not resuming vaginal sex among the cesarean group was 0.83 (95% CI; 0.56–1.24;  $P = 0.37$ ) compared to vaginally delivered women. The risk ratio of not resuming sex was not different among women having an episiotomy or perineal tear or breast feeding. Risk ratio of dyspareunia among cesarean delivered was 0.49 (95% CI; 0.4220.57;  $P < 0.0001$ ) compared to women who

**Table 1: Socio-demographic and obstetric factors for early resumption of vaginal sex and dyspareunia among participants, Pune District, India, 2017-19**

	Resumption of vaginal sex at six weeks			Dyspareunia at six weeks		
	Yes	No	$\chi^2$ ; P	Yes	No	$\chi^2$ ; P
Age Group						
<20	78	99	$\chi^2=2.35$ ;	34	101	$\chi^2=4.04$ ;
20-24	620	906	$P=0.50$	263	814	$P=0.25$
25-29	340	469		122	460	
>30	99	164		40	161	
Education						
Graduate/Post-graduate	135	222	$\chi^2=5.52$ ;	49	189	$\chi^2=4.43$ ;
12 <sup>th</sup> /post 10 <sup>th</sup> Diploma	281	415	$P=0.36$	109	391	$P=0.13$
High School	287	415		127	341	
Middle School	193	305		70	289	
Primary School	118	167		49	172	
Illiterate	92	110		37	115	
Occupation						
Professional	12	29	$\chi^2=4.83$ ;	2	26	$\chi^2=9.28$ ;
Semi Professional	9	16	$P=0.57$	5	11	$P=0.16$
Clerical, Shop Owner	33	40		17	33	
Skilled Worker	25	33		6	32	
Semi-skilled Worker	14	23		6	22	
Un-skilled Worker	17	35		8	29	
Unemployed	1001	1437		389	1363	
Residence						
Urban	721	1032	$\chi^2=8.59$ ;	273	958	$\chi^2=2.12$ ;
Rural	402	456	$P=0.003$	170	510	$P=0.14$
Parity						
Primipara	460	673	$\chi^2=0.55$ ;	199	654	$\chi^2=1.50$ ;
2 <sup>nd</sup> Para	466	678	$P=0.75$	174	635	$P=0.47$
Multipara	166	223		65	197	

delivered vaginally. The risk ratio of dyspareunia among having perineal injury was 1.29 (95% CI; 1.09–1.50;  $P = 0.003$ ).

## Discussion

The criterion of selection site performing more than five cesarean sections per month reduced the number of sites enabling better supervision assuring quality and secondly contribution from remaining hospitals may be trivial. Although broader words such as postpartum female sexual dysfunction, postpartum sexual function, etc., are used, authors preferred to use standard terms non-resumption of vaginal sex and postpartum dyspareunia. We interviewed women after the conventional post-partum period. But many studies have collected information at a varied time interval after birth. We did not use any scale for dyspareunia. We considered a late resumption of sexual intercourse and dyspareunia as a sexual problem and a kind of maternal morbidity. But in a review, sexual dysfunction was assessed only after detection of some maternal morbidity.<sup>[9]</sup>

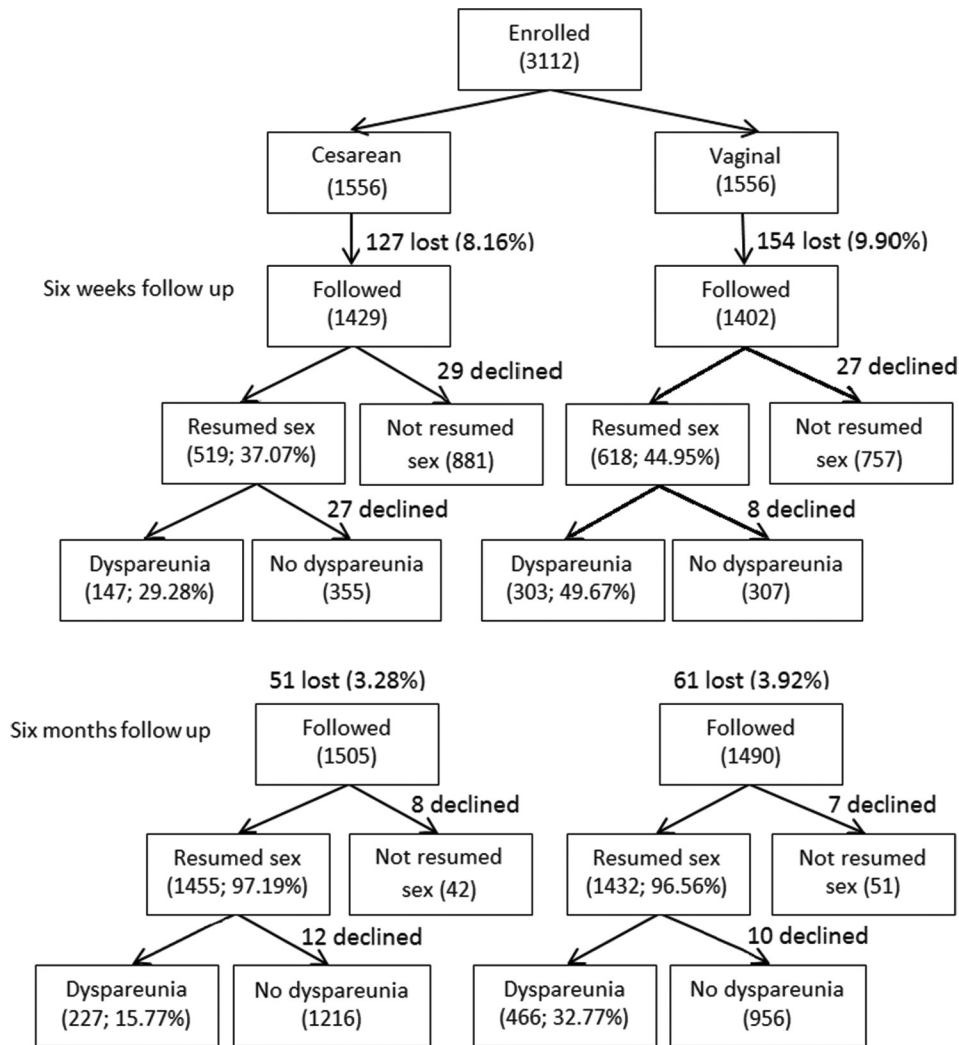
Across the world for varied reasons, postpartum sexual abstinence is observed. Many women are eager to know when they may resume sexual activity. Asking about the resumption of sexual activity is not a usual component of communications at health facilities. Usually, women interact more comfortably

with a family physician rather than the specialists. This may be more valid in the context of sexual problems. In the context of fewer postpartum visits in the government sector,<sup>[10–12]</sup> absence of any psychiatric component therein,<sup>[13]</sup> and the possibility of better dialogue with the family physician, family physicians should take a proactive role in inquiry, counseling, and management of these problems.

## Resumption of vaginal sex

There is no hard and fast rule about the timing of postpartum resumption of sex. Resumption of vaginal sex is an instinct among couples. Non-resumption is a deviation from natural behavior and may affect the quality of life. Hence the woman should not be deprived of her desire and right because of biological and psychological problems. In the present study, majority of women (59.0%) did not resume vaginal sex by 6 weeks postpartum [Figure 3], and by 6 months the proportion was only 3.11%. In the present study, not a single woman resumed sex within 4 weeks. But 8.5% of women resumed sex within 1 week in Uganda<sup>[14]</sup> and 15.6% of women resumed sex within 4 weeks in Nigeria.<sup>[4]</sup> The proportion of non-resumption of sex gradually decreases over time. The proportion of non-resumption of sex within 6 weeks varies from 19.9 to 79.8%.<sup>[5,14–21]</sup> At 8 weeks, it ranges from 20 to 29%.<sup>[22,23]</sup> In one study, the median interval of resuming sex was observed as 5 weeks and at 10 weeks





**Figure 3:** Follow up results of women delivered in hospitals in Pune District, India, 2017-18

only 10% did not resume.<sup>[23]</sup> There is a further improvement at 12 weeks/3 months; a small proportion (20–97.8%) of non-resuming remains.<sup>[8,24–27]</sup> The highest proportion was only from one country, in the rest of the countries the proportion was on lower sides. By 24 weeks/6 months non-resumption is limited from 0 to 35.6% women<sup>[8,14,16,17,20,24,25,28]</sup>; excepting one study.<sup>[24]</sup> The earliest sexual intercourse was reported in week two, and almost all women had resumed sexual intercourse by 24 weeks postpartum. The mean period for sexual intercourse resumption ranges from 5.8 weeks to 3.1 months.<sup>[17,29,30]</sup>

We did not observe any association between selected sociodemographic factors and early resumption of sex excepting a higher proportion among rural women. In Nigeria, women from rural areas resume sex earlier in contrast to women from Ethiopia where urban women resume earlier.<sup>[21,29]</sup> Other studies also did not find any association between these factors and the resumption of sex.<sup>[17,27]</sup> But in some studies, women from higher socioeconomic class,<sup>[16]</sup> or having a higher income,<sup>[5,17]</sup> had higher chances of an early resumption of sex. But strangely it was observed that if the husband's income is less, more women resume sex earlier.<sup>[17]</sup>

Higher is the education of the woman or husband later is the resumption vaginal sex.<sup>[19]</sup> The relation between parity and resumption of sex is inconsistent in different studies,<sup>[5,26]</sup> usually, first parity hastens resumption.<sup>[18,19,21]</sup> Younger women certainly resume sex earlier,<sup>[4,16]</sup> particularly the 20–24 years age group.<sup>[18]</sup> Effect of age, socioeconomic status ceases by 6 months.<sup>[16]</sup> The desire for a male child, another child, and use of family planning methods hasten the resumption of vaginal sex but the strongest factor is pressure from the husband.<sup>[19,21,22]</sup>

Although we did not find an association between breastfeeding and resumption of sex, usually breastfeeding women were less likely to resume sexual activity earlier.<sup>[4,26]</sup> Like the present study but on the higher side, vaginally delivered women resumed sex earlier, 2.5–5.44 times more than cesarean delivered.<sup>[19,20]</sup> Spontaneous vaginal delivery and intact perineum had a higher proportion of resumption of sex.<sup>[15,16]</sup> Mode of delivery did not matter but an injury in the form of cesarean section and episiotomy delayed initiation of coitus by one month, whereas instrumental and spontaneous delivery inversely related to the initiation of coitus, both lead to earlier initiation.<sup>[31]</sup> A higher

proportion of cesarean-delivered women compared with vaginal with episiotomy, resumed sexual intercourse both at 3 months and 6 months.<sup>[32]</sup> The median time to restart intercourse in the vaginal delivery with episiotomy group was 40 days and in the cesarean section group was 10 days postpartum.<sup>[33]</sup> Non-resumption of vaginal sex among women having perineal trauma was almost five times than women without trauma.<sup>[18]</sup> In one study, resumption of sex did not differ between vaginal and cesarean-delivered women.<sup>[8]</sup> The different studies indicate that the highest risk of non-resumption is with perineal injury, followed by cesarean section and the minimum is with an intact perineum.

## Dyspareunia

The overall proportion of women experiencing dyspareunia at 6 weeks in various studies ranges from 45 to 51%.<sup>[26,34–36]</sup> At 3 months, the proportion varies from 27.1 to 62%.<sup>[8,22,25,26,36]</sup> At 6 months, the proportion drops further ranging from 21.2 to 43.4%.<sup>[8,20,25,28,34,36,37]</sup> Follow-up after 6 months is rare; in one study the proportion of dyspareunia decreased from 28.1% at 12 months to 23.4% at 18 months.<sup>[25]</sup> It is distressing to note that even after 18 months about one-fourth of women have dyspareunia. Dyspareunia at 6 weeks among vaginally delivered women was 21% higher than among cesarean-delivered women but among vaginally delivered there was no relation between intact perineum and vaginal repair.<sup>[35]</sup> It was also found to be associated with perineal stitches rather than with the mode of delivery.<sup>[20]</sup> Almost a similar difference (23%) between dyspareunia among cesarean delivered and vaginally delivered women was observed at 3 months.<sup>[8]</sup> In one study, the difference was only 5% and was not significant at 6 months.<sup>[8]</sup> But in another at same postpartum period difference was 35% (40-5%).<sup>[33]</sup> Both episiotomy and perineal tear were associated with dyspareunia.<sup>[37]</sup> The higher risk of dyspareunia among women who had an emergency cesarean section, vacuum extraction, or elective cesarean section compared with women who had a spontaneous vaginal delivery continues till 18 months.<sup>[25]</sup> As a corollary, the chances of dyspareunia were less among spontaneously vaginally delivered women.<sup>[28]</sup> But other studies did not find any association mode of delivery or intact perineum.<sup>[20]</sup> Most of the studies report higher dyspareunia among vaginally delivered women who constitute the majority across the world. But cesarean delivered may also have a higher risk of dyspareunia.<sup>[38]</sup> A review concludes that assisted vaginal delivery is associated with some sexual dysfunction.

During the postpartum period, commonly associated factors with dyspareunia are breastfeeding and first/second parity.<sup>[26,34,35,37]</sup>

The majority of women did not resume vaginal sex by 6 weeks postpartum. At 6 weeks, risk ratio of not resuming vaginal sex among the cesarean group was 1.14 compared to vaginally delivered women, whereas the risk ratio of dyspareunia among cesarean section delivered was 0.59 compared to vaginal delivered. At 6 months, almost all resumed vaginal sex regardless of the mode of delivery and the protective effect of cesarean section continued.

The proportion of women having dyspareunia remained among 33% of vaginally delivered women. We did not find an association of breastfeeding or intact perineum with the resumption of vaginal sex or dyspareunia. There is a paradox, non-resumption vaginal sex is higher among cesarean delivered women, whereas dyspareunia is higher among vaginally delivered women, and about one-fourth of them continue to have it more than 6 months.

The present was a multi-site study and larger than several studies. The data was collected mostly by obstetricians and nurses. The overall proportions may not be generalized as the population of the cesarean section may not be 50%. Secondly, private non-teaching hospitals were not included in the study. We did not use any scale for dyspareunia.

## Conclusions

Although a large proportion of women suffer, in India and probably in other countries also inquiry and counseling about the resumption of vaginal sex and dyspareunia and its management doesn't exist. It reiterates the need for integrating inquiry and redressal of postpartum sexual practices in primary care provided by health care workers including family doctors.

## Acknowledgements

We are thankful to UNFPA Maharashtra, particularly Anuja Gulati for providing funding for undertaking the study. We also thank Dr. Kirti Iyengar UNFPA Delhi, Dr. Ramesh Bhosale, Professor, Department of Obstetrics and Gynecology, BJ Medical College and Sassoon Hospital, Pune and Dr. Aparna Shrotri, Ex Professor, Department of Obstetrics and Gynecology, BJ Medical College and Sassoon Hospital, Pune.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms.

## Key messages

A large proportion of cesarean-delivered women resume sex later than vaginally delivered women. Dyspareunia is observed more among vaginally delivered women and it continues up to 6 months among one fourth of them.

## Financial support and sponsorship

This work was supported by the United Nations Population Fund through State Health System Resource Centre, Government of Maharashtra. There is no grant number. It was Memorandum of Understanding between State Health System Resource Centre, Pune and Bharati Vidyapeeth Deemed University Medical College, Pune, date, 26/05/2017.

## Conflicts of interest

There are no conflicts of interest.

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