International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Harrison L et al. Int J Reprod Contracept Obstet Gynecol. 2023 Dec;12(12):3446-3451
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20233616

Original Research Article

Vulval symptoms in female recreational cyclists

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Received: 28 September 2023
Accepted: 30 October 2023

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ABSTRACT

Background: Cycling is linked to altered genital sensation, numbness, pain and sexual dysfunction in males and the professional female cyclist. After noticing an increase in women presenting to gynaecology clinics with cycling related vulval symptoms, we aimed to identify the incidence, significance and management of vulval pathology among female recreational cyclists.
Methods: An anonymous online questionnaire was distributed to 5 Devon cycling clubs and promoted on the “South West Women’s Cycling” Facebook group. Participants were asked about vulval symptoms, management and if these symptoms had affected their cycling.
Results: 508 women responded to the questionnaire between the ages of 20 and 60+. Overall 221, 43.5% of women said they had been deterred from cycling due to vulval/perineal discomfort. The commonest symptom experienced was pain, 37.4%, followed by chafing, 33.3% and redness, 26.6%. Just over a fifth of women had experienced infections they attribute to cycling: 9.8% urinary tract infections, 7.5% vulvovaginal candida and 3.1% bacterial vaginosis. The most important recommendation for the management of vulval discomfort was to use a women-specific saddle with a central cut out. Other recommendations included the benefits of professional bike fit, use of chamois cream and avoidance of hair removal. The menopausal group (the modal group) also commented on the benefits of topical oestrogen to counter the effects of atrophy.
Conclusions: Vulval/perineal symptoms are a significant problem for female recreational cyclists. Further research and randomised control trials into the prevention and management is required so that evidence-based guidelines can be developed.

Keywords: Vulval symptoms, Cycling, Women

INTRODUCTION

Cycling in the UK has witnessed a steady rise in popularity over the last 10 years. This was most apparent during 2020 where the average miles cycled per person rapidly increased to the highest rate in 20 years.[1] This rise corresponded with the start of the COVID-19 pandemic and associated restrictions. As gynaecologists, we have anecdotally noticed an increase in women presenting to gynaecology services with vulval problems, corresponding to an increase in time spent cycling. With a paucity of available evidence, it is challenging to provide these women with evidence-based information on the incidence and management of their vulval pathology. The effect of cycling on women’s vulva and perineum is underrepresented in the literature compared to research on the effect of cycling on male anatomy.[2] Small studies, usually case studies, and reviews have focused on female competitive cyclists, [3] but to our knowledge there is very little research on recreational cyclists. Elite athletes have a mean age in the mid-thirties, and do not represent the prevalence and management of cycling related vulval pathology in the general cycling population, which includes perimenopausal and menopausal women. Studies

have focused on the effect of cycling on sexual dysfunction, and have only looked at limited symptoms such as pain and numbness.[4-6] Information on the management of cycling related vulval pathology is often anecdotal and through popular cycling websites.[7,8] The authentication of online information is largely unknown. We are unaware of any studies quantifying different prevention or treatment methods used, or collecting qualitative information directly from women.

Aim and objectives

The aim of this questionnaire-based study was to investigate female recreational cyclists and report the incidence of early cycling related vulval symptoms, rather than the more severe vulval pathology often reported as case studies. We aimed to sample a wide age range including perimenopausal and menopausal women. Finally, we wanted to suggest management options to prevent and alleviate these problems.

METHODS

This was a descriptive study using a structured electronic questionnaire. Although the authors are linked to the Royal Devon and Exeter University Hospital Trust, participants were recruited via convenience from local road cycle clubs in Devon, England between April-2021 and August-2021. Recruitment emails with the questionnaire were sent to Exeter Wheelers, Mid Devon Cycling Club, Sid Valley Cycling Club, North Devon Velo and Beers, Gears and Engineers and the questionnaire was promoted on the "South West Women's Cycling" Facebook group. Participation was voluntary and informed consent was implied through completion of the questionnaire. All responses were anonymous. A "Survey Monkey" questionnaire with 9 questions including multiple choice demographic questions, questions about clothing, barrier cream, hair removal, and "yes/no" questions about specific symptoms. The final question was free text to obtain qualitative data. The initial page provided a description and anatomical photo of the vulva. The questionnaire was designed so that it could be completed online in approximately 3 minutes.

Informed consent was implied through participation in the questionnaire and all responses were anonymous. The study aims were discussed with the hospital ethics team who confirmed as it was going to be an anonymous questionnaire, not involving patients and voluntary participation, ethical approval was not required. The questionnaire was pre-tested on 5 female cyclists to ensure it was clear, the questions understood and easy to complete. Following this pilot study the wording of the final questions was confirmed.

RESULTS

508 women responded to the questionnaire between the ages of 20 and 60+. (Table 1). The 50-59 year group was the modal age group. There were no women under the age of 20. Half the participants questionnaire cycled 4 to 8 hours a week. (Table 1).

Table 1: Demographics: age of participants and and average time spent cycling pre week.

Parameters	Percentage
Age of participants	
<20	0
20-29	6.3
30-39	18.5
40-49	25.4
50-59	35.4
60+	14.4
Average time spent cycling per week (hours)	
Less than 4	28.9
4 hours to 8 hours	50.4
8 hours to 12 hours	15.0
12 or more hours	5.7

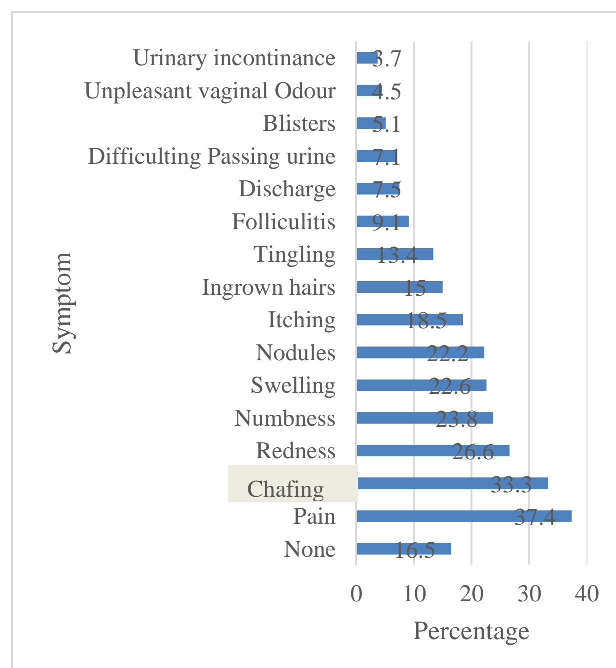

Figure 1: Bar chart demonstrating the vulval symptoms experienced by women in increasing frequency.

Overall, 221, 43.5%, of women said they had been put off cycling due to vulval/perineal discomfort (Table 2). The most common symptom experienced by women was pain 190, 37.4% followed by chafing 169, 33.3%, and redness 135, 26.6% (figure 1). Comments included: "I mostly feel that it is quite tender after a long ride somewhere between pain and tingling.", "I do wonder whether I am less sensitive during intercourse as a result of cycling".

Just over a fifth of women have experienced infections they attribute to cycling-50, 9.8% urinary tract infections, 38, 7.5% vulvo/vaginal candida and 16, 3.1% bacterial vaginosis.

Table 2: Results to questions with related qualitative comments.

Question	Percentage	Comments
Clothing		
Padded shorts without underwear	70	“It is important to buy shorts with good quality pads that fit correctly and use chamois cream to prevent issues” “Many of my symptoms were relieved by a change in saddle”
Padded shorts with underwear	20.5	
Other, Examples: Unpadded every day trousers, leggings “normal shorts” no padding, no lycra	9.5	
Barrier cream		
Use	37	“Barrier cream before and after a ride really helps alleviate issues”, “Sudocream is great for post cycling management and overnight”, “Nappy cream works to reduce friction”
Don’t use	63	
Pubic hair removal		
Remove	35.4	“I used to wax my bikini line and think that ingrown hairs triggered the swelling and infections”, “I only trim my pubic hair, if I shave I have terrible problems”, “I find I have less problems if I don’t shave”
Do not remove	64.6	
Put off cycling due to perineal/vulval discomfort		
Yes	43.5	“Its crushing! I’ve improved by taking a break from cycling and doing more hill walking”, “I had to reduce my cycling because of vulvodynia flaring up and that then affected my fitness”
No	56.5	
Infections attributed to cycling		
Candida	7.5	“I find my groin area gets very hot and I feel like I have cystitis often after cycling even if it doesn’t amount to it”
Bacterial Vaginosis	3.1	
Urinary Tract Infections	9.8	
Other		
Additional Qualitative comments		
Saddles	-	“The right fitting saddle makes the WORLD of difference. Went from always chafed to rarely by changing saddle” “Using a women specific saddle with a cut out centre has made a big difference”. “Changing saddle made the numbness disappear”. “A big central cut-out works really well for me”. “Having a ladies specific saddle really helps with comfort and pain”. “I used to really suffer with a squished vulva when cycling, but now a ladies seat with a cut out section and woohoo comfortable bike rides, no squishing”
Professional bike fit	-	“A professional bike fit helps prevent vulval pain”. “I used to have discomfort on the left side of vulva but this resolved after a bike fit” “Need a good bike fit and good saddle with a hole in it”
Oestrogen cream	-	“Oestrogen has helped enormously”. “When dryness and soreness became an issue, I saw my gynae and now have vaginal oestrogen cream to apply twice a week, which has improved symptoms”

One woman also commented “I find my groin area gets very hot and I feel like I have cystitis often after cycling even if it doesn’t amount to it”.

DISCUSSION

Our questionnaire reported 44% of women surveyed have been deterred from cycling due to vulval/perineal discomfort. Burt and co-workers at British cycling carried out a questionnaire of professional cyclists regarding saddle issues, and almost all of the participants reported problems. These problems not only affected their training but also their competition.[9] Building on the findings from this report, our study has identified vulval pain and discomfort as it a significant problem for recreational cyclists of all ages. If discomfort causes women to stop cycling, and no longer participate in regular physical activity, they lose the protective physical and mental

health benefits reducing their risk of chronic diseases such as cardiovascular disease, obesity, and depression.[10]

The term 'saddle sore' is used to describe the spectrum of skin lesions on the buttocks, genitals and inner thigh that occur during cycling.[11] Initially redness, chafing, pain, loss of sensation and folliculitis, and developing into ulceration and chronic unilateral swelling of the labia majora "bicyclist's vulva".[2,3,9,12] A 2022 systematic review into the prevalence of saddle sores reported them almost exclusively to be in males, however, the author accepts that this likely represents publication bias.[2] We have demonstrated that actually saddle sores are a significant problem in female cyclist. Effective management of early symptoms may prevent the more significant symptoms developing that potentially require surgical management. 10% of women reported urinary tract infections that they attributed to cycling. In a previous large, multinational, cross sectional study female cyclists have been found to have a higher chance of a UTI, genital numbness and saddle sores than those who participate in running and swimming.[5] This is likely to be related to the area being warm, moist, naturally occurring bacteria, relative dehydration when exercising and the pressure placed over the perineum. The major theme in the qualitative data was the positive impact of a using a woman specific saddle. When a woman sits on a road racing bike saddle, her vulva something that wasn't designed to be weight bearing – may be required to take up to 40% of her weight.[13] This is particularly true in aerodynamic positions as the pelvis is rotated forward and more weight is placed on the perineum. The consensus of those that mentioned saddles, is that saddles with a central cut-out were better than those without. Using a high-quality saddle with adequate cushioning is frequently reported as a preventative measure for saddle sores.[2,3,13-15] Both the existing literature and women in our questionnaire suggested that more research is required on women specific saddles and how they influence genital pressures, sensation and pelvic floor symptoms.[16]

Participants reported benefits from having professional bike fits. If the contact points (saddle, pedals and handlebars) are incorrect pressure is placed on soft tissue points instead of the skeleton. Handlebars positioned lower than the saddle are associated with increased perineal pressure and decrease genital sensitivity.[17] It would be interesting to look at the amount of modification and cost required from a standard bike set up to make it optimal for men and women to see if there is a significant gender difference. These modifications all come at a financial cost which could discourage the recreational cyclist. Chamois cream reduces friction, hydrates the skin and prevents cracking of the skin. However, only 1/3 of women used this in our study. This could be due to lack of knowledge about how it may prevent damage and improve symptoms. One review found using chamois cream as a lubricant was the most commonly cited method of prevention of saddle sores.[2] Cycling groups also advice the use of lubricating chamois cream to reduce friction and the associated complications.[15] There is a wide range of different creams and lubricants, some with anti-fungal, anti-bacterial or steroid properties. More research is required into different formulations and publicity to increase awareness.

Good hygiene and grooming habits are recommended to reduce the incidence of saddle sores. We found more women grew pubic hair as oppose to remove it. This may reflect the background incidence of women's grooming preferences, or it may be because like the British cycling team they noticed avoiding hair removal decreases the incidence of folliculitis, ingrown hairs, and sores. Advice from cycling groups, such as Cycling UK, is to wear padded lycra bib shorts, also known as chamois shorts. It is also advised not to wear underwear so that there are fewer seams rubbing against you, reducing chafing.[15,18] This was reflected in our results where the majority, 70% wore chamois shorts without underwear.

Perimenopausal and menopausal cyclists

In the UK, the mean age of natural menopause is 51 years.[19] The perimenopause is the period before the menopause characterised by irregular cycles of ovulation and menstruation, symptoms of oestrogen deficiency and ends 12 months after the last menstrual period. Women in the 50-59 category were the modal age range in our study. This may be related to completion bias, with this group having the most problems. Saddle sores have been most represented in men between the ages of 40 and 70, although as mentioned above, the review author believed this to represent publication bias and not their personal experience.[2] This group of women most commonly cycled 4-8 hours per week (52%). 36% of women in the 50-59 category stated they had been deterred from cycling due to vulval/perineal discomfort. The most common symptoms they reported experiencing were pain,37%, chafing ,34%, redness, 27% and numbness, 24%. The comments from this group were similar to other ages with an emphasis on a correctly fitted saddle. Several women commented on the benefits of topical local oestrogen to counter the effects of atrophy, for example: "postmenopausal skin is more fragile, seems to chafe more easily", "really helped by topical oestrogen". This simple intervention may help perimenopausal/menopausal women who are presenting with vulval problems and enable them to keep cycling. This perimenopausal/menopausal age group most frequently reported urinary problems after cycling compared to the rest of the participants. Dysuria, cystitis like symptoms and urethral gland infections were examples of these problems. These could also be attributed to oestrogen deficiency and therefore may also be reduced with topical vaginal oestrogen.

Limitations

This study was conducted through a questionnaire on social media and sent to local cycling groups. We do not know the uptake rate and entire population who had access to the questionnaire and consequently, we cannot assume

that those who completed the questionnaire are representative of the overall female cycling population. Although we collected some information on some demographics, we did not include race, BMI and whether women were sexually active to ensure these were not confounding variables. Completion bias could also be a factor in our results. Women who have experienced vulval problems are more likely to complete the questionnaire than those who have never had a problem. The sensitive nature of the questions could lead to embarrassment and women not feeling comfortable completing the questionnaire. A review into saddle sores found the limited literature did not seem to reflect the prevalence of saddle sores in the cycling community potentially due to sensitivity of the health issue.[3] They also commented on the limited research and associated literature. Our study was sent to local road cycling groups and therefore the data may not be applicable to mountain or gravel cyclist or those using static spin or watt bikes. If weight is distributed on the glutes and sit-bones, rather than the soft tissue of the vulva, this will alter the incidence of vulval pathology. The perimenopausal/menopausal analysis was based on the age of participants, 50-59. However, the perimenopause may begin aged 45 and these women would not be included in the sub-group. We did not specifically ask women if they considered themselves to be perimenopausal or menopausal. Subsequently some women would have been missed from this analysis group. Our study refers to "women" throughout. However, it is important to acknowledge that it is not only people who identify as women that may suffer with vulval complications from cycling. Gynaecology services and delivery of care must be appropriate, inclusive and sensitive to the needs of individuals whose gender does not align with the sex they were assigned at birth.

CONCLUSION

This study identified that 44% of recreational female cyclists have been deterred from cycling due to vulval/perineal discomfort. Vulval symptoms of pain, redness, chafing and numbness may be the start of more serious cycling related vulval pathology. Management advice including using women specific saddles with a central cut out, professional bike fits, using chamois or barrier cream and avoidance of pubic hair removal may reduce the incidence of vulval complications. The benefit of topical oestrogen to counter the effects of atrophy may be useful for the perimenopausal and menopausal cyclist. Our findings will increase awareness of the effects of cycling on the vulva. It will help refine the advice that we give to women, enabling them to continue cycling and benefit from the associated improved physical and mental health.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Harrison L, Edey K. Vulval symptoms in female recreational cyclists. Int J Reprod Contracept Obstet Gynecol 2023;12:3446-51.