

# Incidence of Post Operative Sexual Dysfunction Following Left Sided Colon and Rectal Surgery in a Surgical Patient Cohort in Northern Saskatchewan

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**Purpose:** The long-term complications of colon cancer surgery are now being investigated to a greater extent given the improvement in survival rates for all stages of colon and rectal cancer. Patient quality of life is now playing a significant role in the cancer survivorship and sexual complications are part of that survivorship spectrum.

**Patients and Methods:** A sexual health questionnaire (EORTC SHQ-22<sup>®</sup>) was employed to perform an audit of the sexual complications following surgery. Ethics approval was obtained from the university of Saskatchewan and a telephonic interview was conducted. This was pre-empted by a telephonic consent script by our medical office assistant.

**Results:** Twenty-two percent of the patients were deceased, and 52% of the patients could not be reached telephonically. The rates of sexual complications were well within the published rates from tertiary centers employing colorectal specialists.

**Discussion:** Sexual complications are a newer form of complications given the proximity of the pelvic parasympathetic plexus to the sacral promontory. The complication rates for our community surgeons are equivalent to that of colorectal specialists from tertiary centres. Further explanation of the sexual complication risks should form part of the discussion for all surgeons undertaking colon or rectal surgery.

**Limitation:** The lack of documented pre-operative sexual dysfunction and a small patient cohort hampered the findings of this study.

**Conclusion:** The sexual complication rates at our institute are well within published rates of sexual dysfunction, post colonic and rectal surgery.

**Keywords:** sexual complication, colonic surgery, sexual quality of life, surgical audit

## Introduction

The long-term survivorship of colorectal cancer patients has increased in the past decade due to a multitude of factors. These include better patient selection, minimally invasive surgical techniques, and a combination of adjuvant therapies. The five-year survivorship has increased for all stages of colorectal cancer to the extent that the concept of cancer as a chronic disease is now a reality.<sup>1-3</sup> This has led to an increasing awareness of the long-term complications of colorectal cancer surgery. At the forefront of this is the patient's quality of life through oncological remission. Concepts such as daily activities of living and sexual function are now being discussed in an open forum.<sup>4</sup> Sexuality has an important role in quality of life as most studies show that colorectal cancer patients remain sexually active post-treatment. Sexual function in cancer survivors can affect a patient's self-perception as well as their partner's.<sup>2,4</sup> The etiology of sexual dysfunction has been attributed to pelvic autonomic nerve damage. This includes the inferior mesenteric plexus, superior hypogastric plexus, hypogastric nerves, and pelvic plexus.<sup>1,5,6</sup> The pathophysiology involves poor surgical technique, radiotherapy, or post-operative inflammation and fibrosis that incorporates the autonomic nerves. The majority of studies involving sexual function are often from tertiary centers involving colorectal specialists. Ours is one of the first studies to look at the sexual outcomes in a community hospital involving community general surgeons who perform colorectal cancer surgery. This was a retrospective audit to investigate if the long-term complications are on par with published rates from tertiary centers. We believe this is the first audit of its kind in rural Canada.

## Materials and Methods

This was a retrospective audit that involved obtaining ethics approval from the University of Saskatchewan and a sexual health questionnaire. Approval from the ethics committee and the Division of General Surgery was obtained. All data from patients who underwent surgery for left-sided colorectal cancer in Prince Albert, Saskatchewan between 2011 and 2021 was analyzed. A medical office assistant then made initial contact with the patient in the form of a telephone consent script [Figure 1](#). We then interviewed the patients who agreed to participate in the study.

This was initially approved by the University of Saskatchewan ethics committee prior to initiation.

Approval was obtained from the European Organisation for Research and Treatment of Cancer (EORTC) to use their EORTC SHQ-22<sup>®</sup> sexual quality of life questionnaire [Figure 2](#). This questionnaire was developed to assess the sexual health in male and female cancer survivors. This is a cross-culturally validated measure that can be used to assess the sexual health of cancer patients in clinical trials as well as in clinical practice. The breakdown of patients is distributed in [Table 1](#). This study complies with the framework of ethical guidelines set out in the Declaration of Helsinki. Ethics approval was obtained from the ethics committee at the University of Saskatchewan, protocol number BIO-1018.

**Study Title:** The Incidence of Sexual Complications in Colon Surgery Due to Pelvic Parasympathetic Nerve Damage

### Telephone Consent Script

Date and time of call: \_\_\_\_\_ Patient Name: \_\_\_\_\_  
Hello – May I speak with Mr. / Mrs. /Ms. [last name] \_\_\_\_\_.

My name is [redacted]. I am a medical office assistant working at the [redacted] clinic in Prince Albert, Saskatchewan. You have been identified as a potential participant for a study because you underwent left colon or rectal surgery within the last 10 years and Dr. [redacted] from the [redacted] clinic was your surgeon. Dr. Pillay, a general surgeon who also works at the [redacted] clinic, is conducting a research project in the Department of Surgery at the University of Saskatchewan looking into the incidence of sexual complications in colon surgery.

#### Appropriateness of call time:

Would you be able to spare a few minutes for me to briefly explain the study, and see if you would be interested in being contacted to participate? No, now is not a good time. Is there a better time to call you back? Yes – date/time \_\_\_\_\_

Yes – Continue to explain the study.

No, please do not call back – Thank you for your time.

#### Voluntary nature of the research:

I want to explain to you that your participation is entirely voluntary. If you do not wish to take part, you do not have to provide a reason. Your future medical care will not be affected in any way.

#### Study Procedures

If you agree to take part in the study, you will be asked a number of questions regarding your sexual health. Dr. Pillay will contact you and read questions from a standardized and validated questionnaire. The information you provide will remain strictly confidential. Dr. Pillay will also gather information from your surgical chart to help determine the type of colon surgery you had, the time of the surgery, and whether there were any surgical complications.

Answer questions, as appropriate.

Are you interested in participating? Would you agree to have Dr. Pillay contact you for participation? At that time, he will go over the consent form for the project and answer any questions you might have before administering the questionnaire.

Yes – confirm contact phone number: \_\_\_\_\_ and inform the patient that Dr. Pillay will call about the study.

No – Thank you for your time.

We are happy to answer any questions that you have about the study. You may contact Dr. Pillay directly at our office.

Thank you for your time.

#### **This person has chosen to:**

**Be contacted:**

**Not be contacted:**

**Figure 1** Telephone consent script.

ENGLISH



Participant ID: \_\_\_\_\_

**EORTC SHQ-C22**

Patients sometimes report changes in their sexual health after treatment.

Please respond to all of the statements below by circling the number that best applies to you. There are no "right" or "wrong" answers. The information that you provide will remain strictly confidential.

Please try to respond to as many questions as possible.

During the last 4 weeks:	Not at all	A little	Quite a bit	Very much
1. How important to you is an active sex life?	1	2	3	4
2. Have you had decreased libido?	1	2	3	4
3. Have you been satisfied with your level of sexual desire?	1	2	3	4
4. Has sexual activity been enjoyable for you?	1	2	3	4
5. Have you been satisfied with your ability to reach an orgasm?	1	2	3	4
6. Have you been worried about being incontinent (urine/stool)?	1	2	3	4
7. Has fatigue or a lack of energy affected your sex life?	1	2	3	4
8. Has the treatment affected your sexual activity?	1	2	3	4
9. Have you felt pain during/after sexual activity?	1	2	3	4
10. Have you been worried that sex would be painful?	1	2	3	4
11. Have you had communication with health professionals about sexual issues?	1	2	3	4
12. Have you been satisfied with the communication about sexual issues between yourself and your partner?	1	2	3	4
13. Have you been worried that your partner may cause you pain during sexual contact?	1	2	3	4
14. Have you been satisfied with your level of intimacy?	1	2	3	4
15. Have you felt insecure regarding your ability to satisfy your partner?	1	2	3	4

Please go on to the next page

ENGLISH

During the last 4 weeks:	Not at all	A little	Quite a bit	Very much
16. Have you been sexually active?	1	2	3	4
17. To what extent did you feel sexual enjoyment?	1	2	3	4
18. Have you been satisfied with your sex life?	1	2	3	4

**For men only**

During the last 4 weeks:	Not at all	A little	Quite a bit	Very much
19. Were you confident about obtaining and maintaining an erection when you had sex?	1	2	3	4
20. Have you felt less masculine as a result of your disease or treatment?	1	2	3	4

**For women only**

During the last 4 weeks:	Not at all	A little	Quite a bit	Very much
21. Have you experienced a dry vagina during sexual activity?	1	2	3	4
22. Have you felt less feminine as a result of your disease or treatment?	1	2	3	4

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**Figure 2** EORTC SHQ-22 sexual quality of life questionnaire.

**Notes:** Approval was obtained from the European organisation for research and treatment of cancer (EORTC) to use their EORTC SHQ-22<sup>®</sup> sexual quality of life questionnaire.

**Table 1** Breakdown of Patients and Respondents

Total Number of Patients	192	
Male	115	
Female	77	
Deceased	43	
Eligible patients	149	
Patients contacted	72	
Respondents		58
Declined to respond		14
Unable to contact	77	

## Results

### Discussion

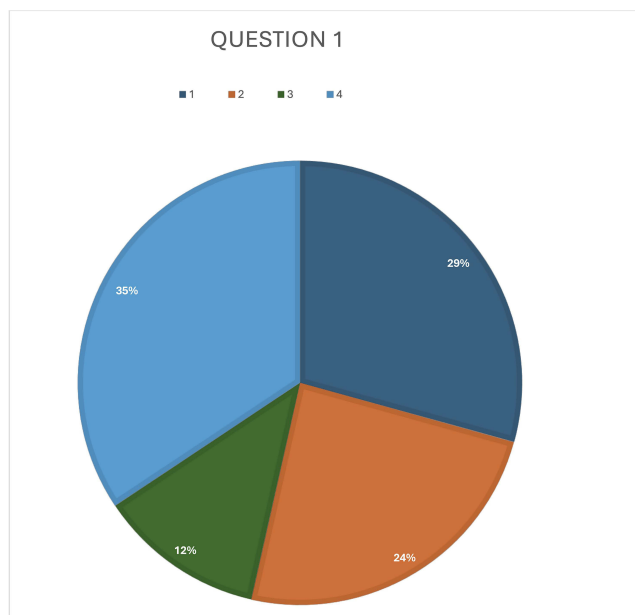
It is important to acknowledge that this survey is merely a snapshot into the lives of our colorectal cancer survivors and not an attempt to define their post-surgical quality of life in terms of sexual complications. The questions answered related to the preceding four weeks post-surgery and the duration between survey completion and their actual completion of surgical and oncological therapy varied greatly. It is therefore difficult to estimate the actual effects of the treatment paradigm given the discrepancy in this time period for the various patients interviewed.

Forty-seven percent of the patients still feel that a sex life was an important part of their lives (Figure 3). Sixty-six percent did not report a drop in their sexual libido post cancer surgery and adjuvant therapy (Figure 4). Fifty-five percent of the respondents reported being satisfied with their level of sexual desire (Figure 5). Fifty-four percent reported being satisfied with their level of sexual activity (Figure 6). This study did not have the depth to focus and assess specific sexual dysfunctions, pathologies or subgroups of men or women. It is more of an overview about the topic of sexual function and health of patients undergoing colorectal surgery for malignancy. Deceased patients made up 22% of our patient cohort (Table 1).

Sixteen percent and 19% of the respondents had issues with sexual orgasm and urinary and stool incontinence (Figures 7 and 8). This is far lower than recently published rates from tertiary centres.<sup>7,8</sup> Sixty percent felt their lack of energy did not affect their sex life (Figure 9), while 72% felt the surgical and oncological treatment they underwent did not affect their sexual activity (Figure 10). The type of surgeries included were not limited to the pelvis and while we looked at left sided colonic and rectal surgeries, right hemicolectomies are also linked to sexual dysfunction (Table 2). Apart from the sympathetic and parasympathetic nerve involvement, the psychological factors of sexual dysfunction includes stress, the presence of cancer, body dysmorphism due to a potential stoma, pre-surgical relationship issues, the various types of adjuvant therapy and their associated side effects.<sup>9–11</sup> To be able to determine a specific etiology is beyond the scope of our article.

Four percent of the patients experienced pain during or after intercourse (Figure 11) and 95% of the respondents did not have a fear of dyspareunia (Figure 12). Ninety-eight percent of the patients did not contact a health professional about their sexual issues post-surgery and 50% were not happy about communicating their concerns with their intimate partner (Figures 13 and 14). Given our demographics in rural Canada with an overall conservative ethos, these findings are not surprising. Ninety-seven percent did not report a fear of intimate partner dyspareunia (Figure 15), and 34% were not happy with their level of intimacy with their sexual partner



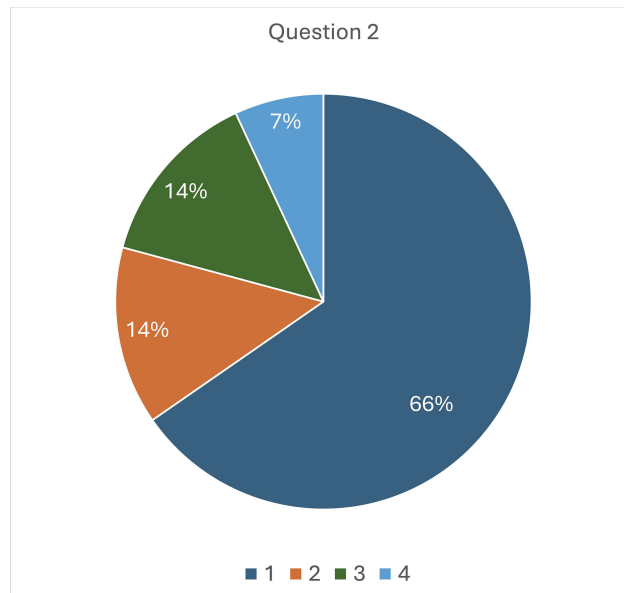


Question 1: How important is an active sex life?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

**Figure 3** Question 1.

**Note:** How important to you is an active sex life.

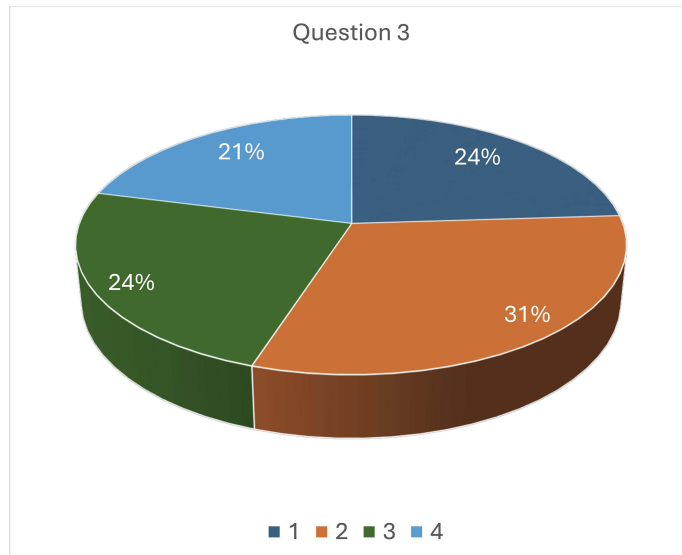


Question 2: Have you had a decreased libido?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

**Figure 4** Question 2.

**Note:** Have you had decreased libido.

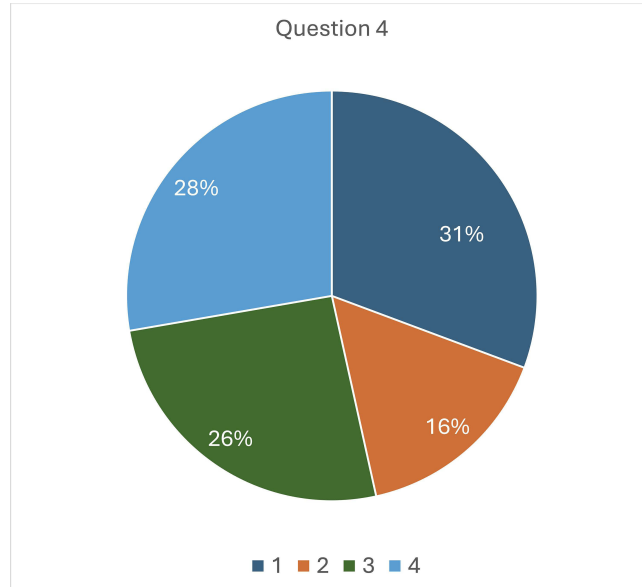


Question 3: Have you been satisfied with your level of Sexual desire?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 5 Question 3.

Note: Have you been satisfied with your level of sexual desire.

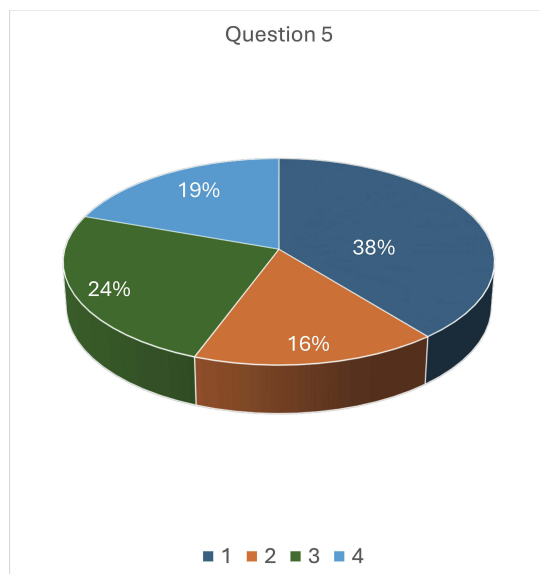


Question 4: Has sexual activity been enjoyable for you?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 6 Question 4.

Note: Has sexual activity been enjoyable for you.

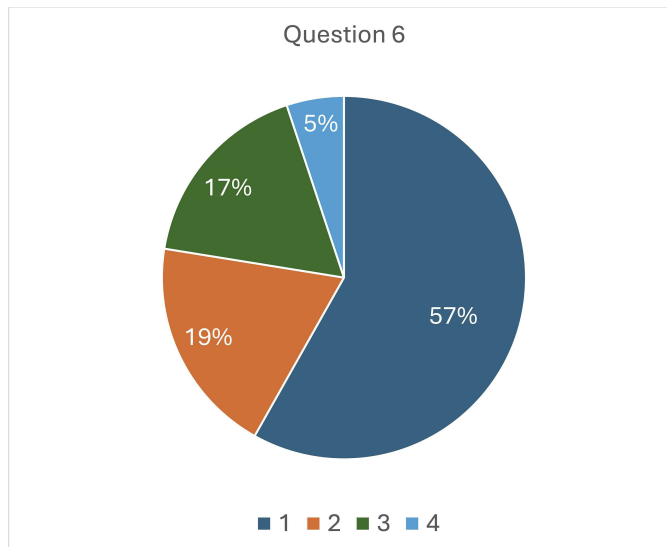


Question 5: Have you been satisfied with your ability to reach an orgasm?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 7 Question 5.

Note: Have you been satisfied with your ability to reach an orgasm.

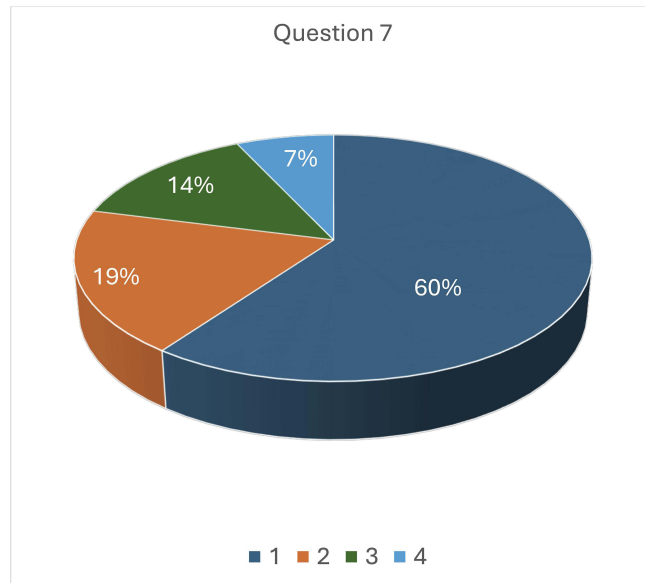


Question 6: Have you worried about being incontinent (urine/stool)?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 8 Question 6.

Note: Have you worried about being incontinent (urine/stool).

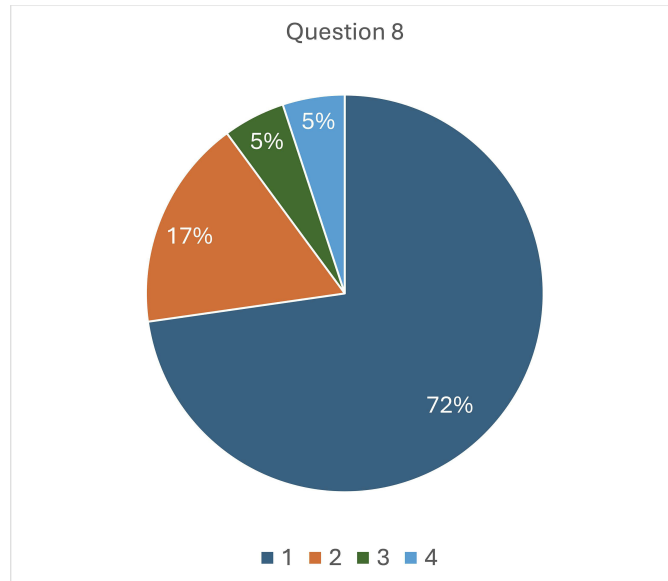


Question 7: Has fatigue or lack of energy affected your sex life?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 9 Question 7.

Note: Has fatigue or lack of energy affected your sex life.



Question 8: Has the treatment affected your sexual activity?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

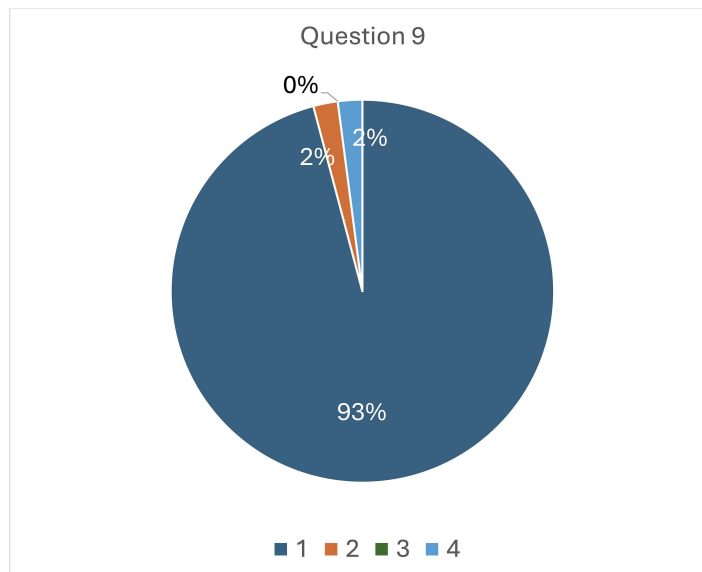
Figure 10 Question 8.

Note: Has the treatment affected your sexual activity.

**Table 2** Types of Surgeries and Anastomosis

<b>Type of Surgery</b>		
	Left hemicolectomy	15
	Sigmoid Colectomy	69
	Anterior resection	27
	Low anterior resection	47
	Abdomino-Perineal resection (APR)	34
<b>Anastomosis</b>		
	Handsewn	49
	Stapled	109
	Muco-cutaneous (colostomy)	34
<b>Abdominal surgery</b>		
	First surgery	81
	Repeat surgery	111

(Figure 16).16% of respondents felt insecure about their ability to satisfy their partner sexually (Figure 17). Sixty-four percent of the patients were sexually active in the past month prior to answering the questionnaire (Figure 18). Fifty-five percent of the respondents did not experience sexual enjoyment in the last month, while four percent enjoyed it very much (Figure 19).36% of respondents felt satisfied with their overall sex life (Figure 20).

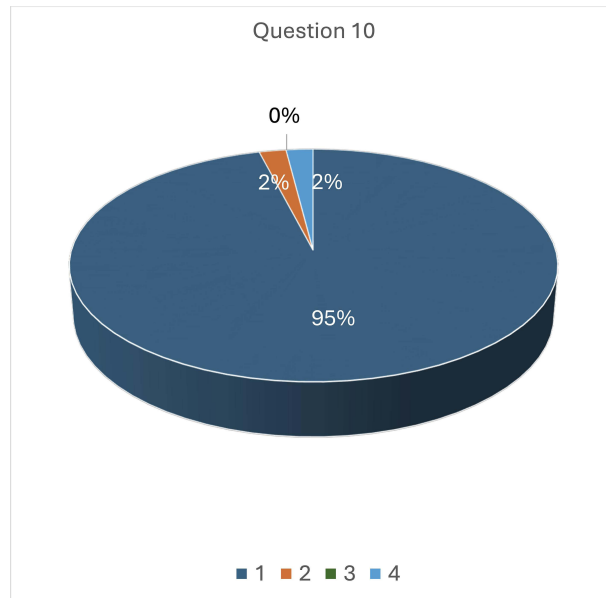


Question 9: Have you felt pain during/after sexual activity?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

**Figure 11** Question 9.

**Note:** Have you felt pain during/after sexual activity.

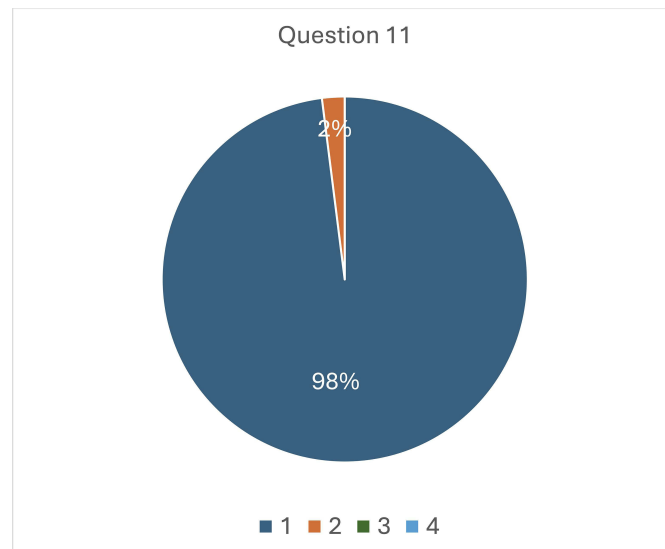


Question 10: Have you been worried that sex would be painful?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 12 Question 10.

Note: Have you been worried that sex would be painful.



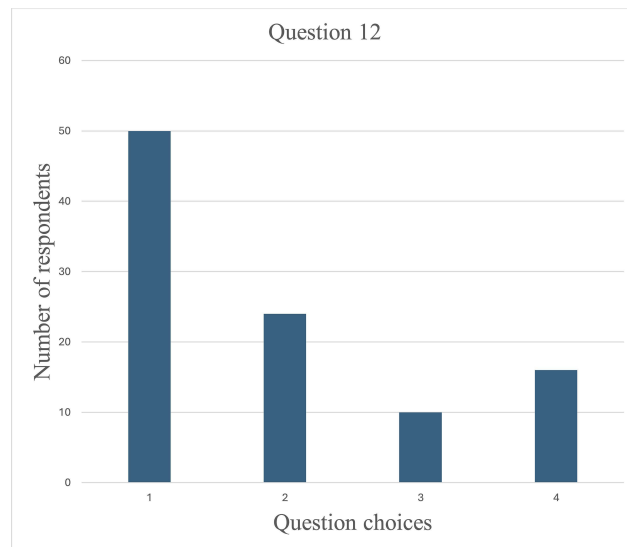
Question 11: Have you had communication with health professionals about sexual issues?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 13 Question 11.

Note: Have you had communication with health professionals about sexual issues.



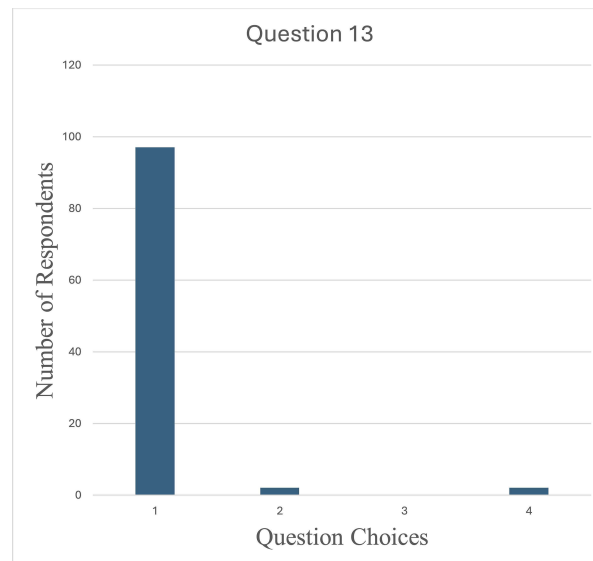


Question 12: Have you been satisfied with the communication about sexual issues between yourself and your partner?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 14 Question 12.

Note: Have you been satisfied with the communication about sexual issues between yourself and your partner.

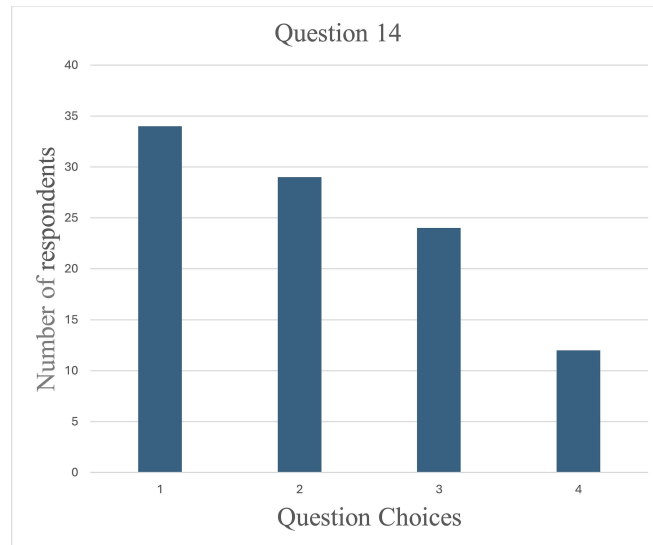


Question 13: Have you been worried that your partner may cause you pain during sexual contact?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 15 Question 13.

Notes: Have you been worried that your partner may cause you pain during sexual contact.

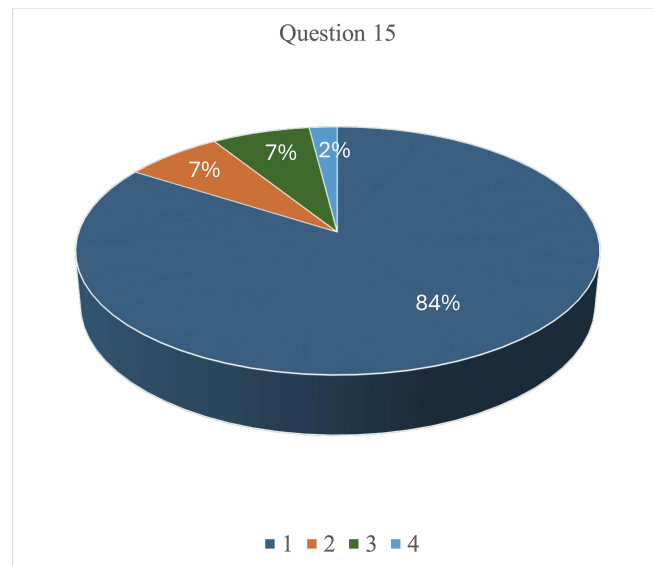


Question 14: Have you been satisfied with your level of intimacy?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 16 Question 14.

Note: Have you been satisfied with your level of intimacy.

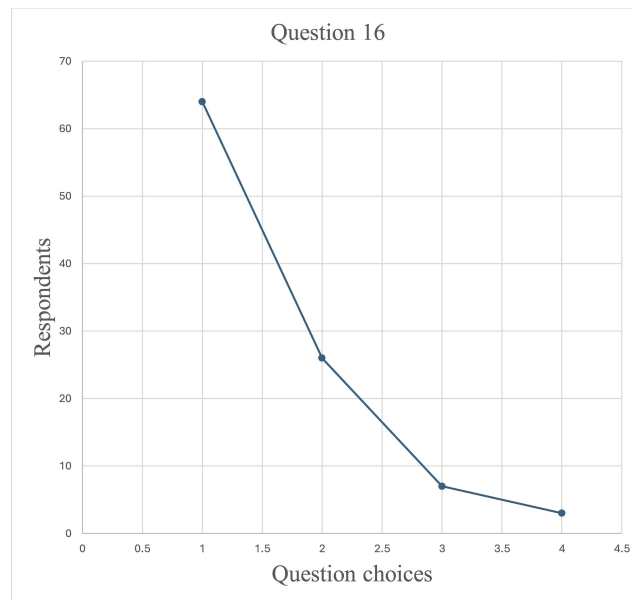


Question 15: Have you felt insecure regarding your ability to satisfy your partner?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 17 Question 15.

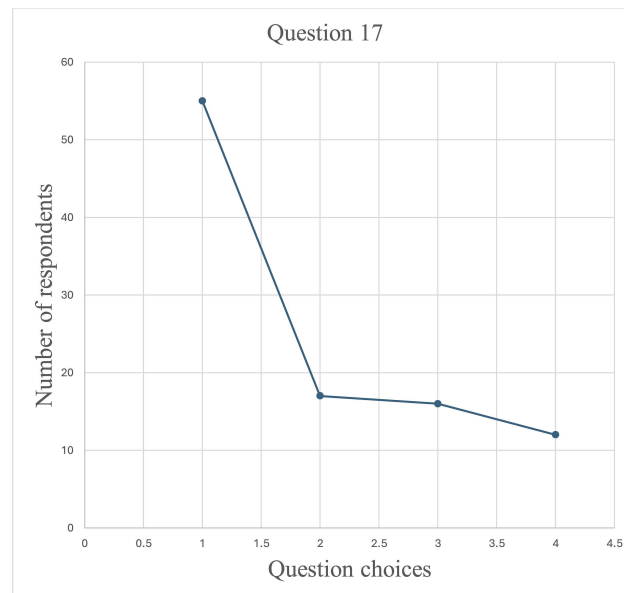
Notes: Have you felt insecure regarding your ability to satisfy your partner.



Question 16: Have you been sexually active?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

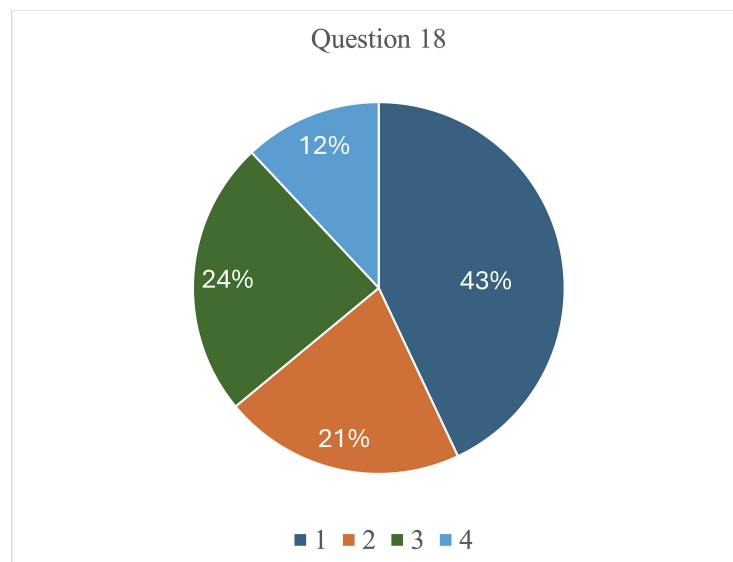
**Figure 18** Question 16.  
**Note:** Have you been sexually active.



Question 17: To what extent did you feel sexual enjoyment?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

**Figure 19** Question 17.  
**Note:** To what extent did you feel sexual enjoyment.



Question 18: Have you been satisfied with your sex life?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

**Figure 20** Question 18.

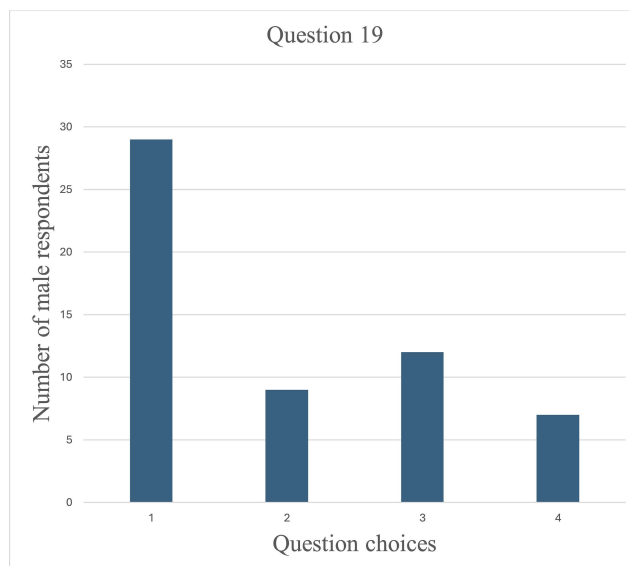
**Note:** Have you been satisfied with your sex life.

A shortcoming of our study was the inability to document the underlying sexual dysfunction prior to the cancer diagnosis and treatment. Documented pre-operative sexual dysfunction would further reduce the incidence of the reported sexual dysfunction via the EORTC SHQ-22 questionnaire.<sup>12,13</sup> A second issue is the inability to validate the patient responses as the interviews were conducted telephonically.

A personal interview would have allowed us to gauge the emotional response to the questions as well to exclude any underlying anxiety or reticence in the respondents. This study is severely underpowered through the small patient cohort and what is needed in the future is a multicentered prospective audit with documented preoperative rates of sexual function.<sup>12,13</sup> This will also help to eliminate selection bias as the patients questioned were all cancer survivors at the time of the audit. The sexual dysfunction of deceased patients was not known and therefore difficult to determine if this would have skewed our findings in a positive or negative manner.

Fifty-one percent of the males did not feel confident about maintaining an erection during intercourse but 88% of the males said that their masculinity was not affected by the treatment they underwent (Figures 21 and 22). This is in keeping with previous studies.<sup>14</sup> Sixty-five percent of the female respondents did not report vaginal dryness during intercourse, similar to published outcomes.<sup>12</sup> Eighty-six percent did not feel less feminine because of the treatment they underwent (Figures 23 and 24). Similar percentages of males and females (88% vs 86%) reported that their sexuality was unaffected by their treatment.<sup>14</sup> This may be due to the elderly patient cohort and the relevance of current sexual activity in their lives. Certainly, this opinion could change in patients with hereditary colorectal cancer seen in younger patients in their twenties and thirties.<sup>15,16</sup>

Fifty-seven percent of the patients had undergone previous abdominal operations Figure 4, increasing the complexity of surgery and therefore the risk of nerve damage due to intra-abdominal adhesions. A handsewn anastomosis Figure 4 performed in 25% of the surgeries was not shown to be a risk factor. The inability to derive an active reference point also hampers the findings of our study. Age-related parameters of sexual dysfunction in a cancer-free population would need to be ascertained as a control group, representative of our local community, to derive a realistic baseline

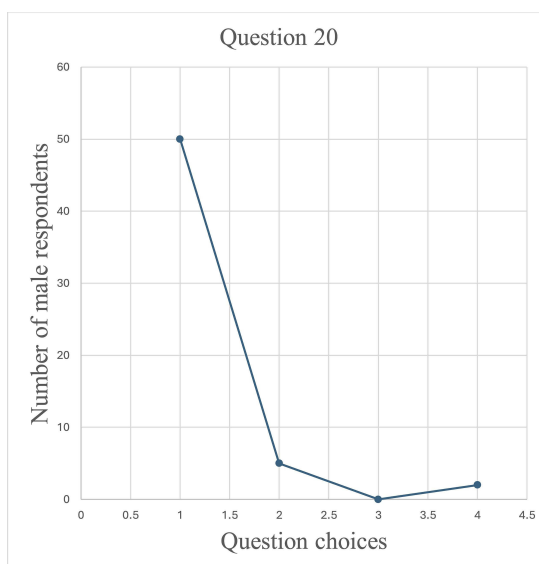


Question 19: Where you confident about obtaining and maintaining an erection when you had sex?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 21 Question 19.

Notes: Where you confident about obtaining and maintaining an erection when you had sex.

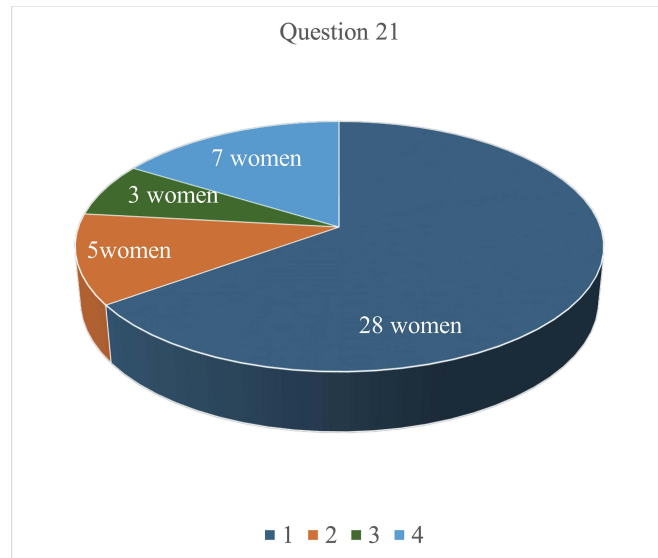


Question 20: Have you felt less masculine as a result of your disease or treatment?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 22 Question 20.

Notes: Have you felt less masculine as a result of your disease or treatment.

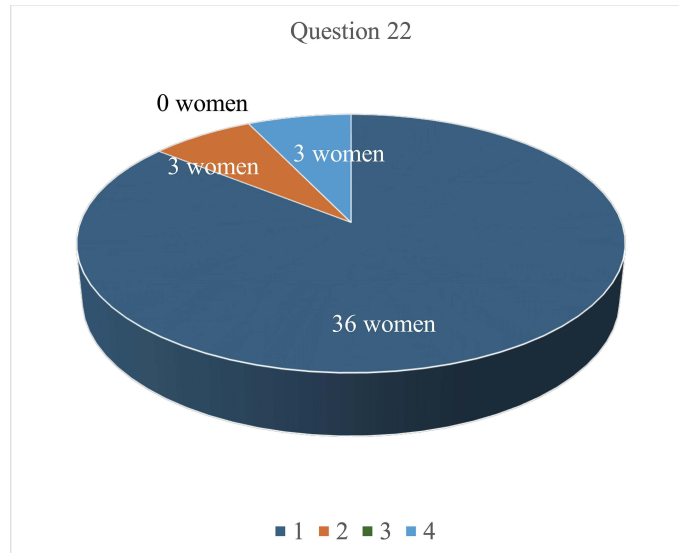


Question 21: Have you experienced a dry vagina during sexual activity?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 23 Question 21.

Notes: Have you experienced a dry vagina as a result of sexual activity.



Question 22: Have you felt less feminine as a result of your disease or treatment?

- 1 = Not at all
- 2 = A little
- 3 = Quite a bit
- 4 = Very much

Figure 24 Question 22.

Notes: Have you felt less feminine as a result of your disease or treatment.



group for comparison with patients in our study.<sup>13,17</sup> If the incidence of sexual dysfunction in our cancer group is similar to the control group, one could argue there is no significant effect of undergoing cancer treatment as regards sexual dysfunction in our surgical cohort.

A significant short coming of the study is the actual number of respondents that participated. Thirty-nine percent of the eligible patients answered the survey [Figure 3](#). Twenty-two percent were deceased ([Table 1](#)).

We were unable to contact 52% of the eligible respondents for the study. This is seen in other studies as well where obtaining the current phone number is the rate limiting step.<sup>18,19</sup> This could have influenced the findings in the study. The transient population in northern Saskatchewan, with large numbers of migrant workers, may also have played a role in this.

A significant finding of our audit was the fact that none of the patients contacted, were even aware of the possibility of sexual dysfunction following colon and rectal surgery and their adjuvant therapy. Neither the surgeons nor the oncologists had broached this Discussion in either the pre- or post-treatment phases.<sup>20,21</sup> This not only highlights but also perpetuates the reticence to identify but also treat this chronic complication in the management of colorectal cancer patients.

Whether this will continue to be part of the surgical complication discussion and oncological remission effects remains to be seen. In previous studies, health care workers expressed the inability to have a significant discussion about sexual dysfunction in cancer patients.<sup>2,13</sup> The use of tools such as sexual health questionnaires may serve to alleviate this issue.<sup>22,23</sup>

An encouraging aspect of this audit is that the documented rate of sexual dysfunction falls within published rates from tertiary centers. The colorectal cancer surgeries were undertaken by community general surgeons and to have similar outcomes to colorectal surgeons in tertiary centers is a testament to the quality of surgical work undertaken in rural Saskatchewan.

## Limitations

This study remains underpowered due to the small patient cohort and the lack of documented, preoperative sexual dysfunction in our patients. The small number of telephonic respondents also serves to highlight the difficulty in surgical research in rural Saskatchewan.

The large transient population only serves to accentuate this problem.

Twenty-two percent of respondents were deceased at the time of the interview and fifty-two percent of eligible respondents could not be contacted. Their sexual complication rate could have skewed our results in a positive or negative way.

## Conclusion

We present an audit of sexual complications following left sided colonic and rectal surgery in rural Saskatchewan. The documented complication rates, falls within recognized and published rates of colorectal surgeons in tertiary centers. This is a testament to the community surgeons in our hospital and the quality of surgical care delivered.

## Ethics Statement

Ethics approval was obtained from the University of Saskatchewan ethics committee.

## Acknowledgments

We would like to thank the members of the division of general surgery in the Victoria hospital, Prince Albert, Saskatchewan for their permission to access the data and support during the preparation of this manuscript. We also thank our medical office assistant, Ms. Kendall Leigh Kalinowski for her invaluable assistance during the telephonic interview process.

## Disclosure

The authors report no conflicts of interest in this work.

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