The impact of targeted fee increases on the pay disparity between female and male general surgeons in British Columbia

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Accepted July 11, 2023

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Cite as: *Can J Surg* 2023 November 1; 66(6). doi: 10.1503/cjs.000922

Background: High-level payment data provided by Doctors of BC showed a 19.7% pay disparity in annual payments between female and male general surgeons in fiscal year 2019/20, and this was previously as high as 30% in 2012/13. This study aimed to examine the impact of targeted fee increases on pay disparity by sex over time.

Methods: The top 35 fees billed by female general surgeons, representing 76.3% of total payments, were retrospectively analyzed. The pay disparity by sex was calculated for each individual fee from 2000/01 to 2019/20.

Results: There were notable billing differences between female and male general surgeons. Female surgeons billed breast oncology procedures, malignancy consultations and visits, and peritoneal malignancy surgical procedures in greater proportions than did their male counterparts. Male surgeons billed hemorrhoid banding and rigid proctosigmoidoscopy in greater proportions than their female counterparts. With targeted fee increases, pay disparity by sex worsened for 17 of the top 35 fees but improved for the other 18 from 2010/11 to 2019/20, to varying degrees, resulting in an overall reduction in pay disparity by sex from 23% to 15%. If across-the-board fee increases had been implemented instead of targeted fee increases, the disparity in 2019/20 would have been 19% instead of 15%.

Conclusion: Targeted fee increases reduced pay disparity between male and female general surgeons compared with theoretical across-the-board fee increases in British Columbia from 2010/11 to 2019/20, but not uniformly; some fee increases resulted in increased disparity. Other physician groups should conduct a similar analysis and allocate future fee changes with the aim of improving rather than worsening disparity.

Contexte : Les données sur les honoraires de haut niveau fournies par les médecins britanno-colombiens ont montré une disparité salariale annuelle de 19,7 % entre les chirurgiennes et les chirurgiens pour l'année fiscale 2019/20; cette disparité atteignait 30 % en 2012/13. La présente étude visait à mesurer l'impact des augmentations ciblées des honoraires sur la disparité salariale entre les sexes au fil du temps.

Méthodes : Les 35 principaux honoraires facturés par les chirurgiennes générales, représentant 76,3 % des paiements totaux, ont été analysés rétrospectivement. La disparité salariale selon le sexe a été calculée pour chacun des honoraires entre 2000/01 et 2019/20.

Résultats : On a observé des différences de facturation notables entre les chirurgiennes et les chirurgiens de chirurgie générale. Comparativement à leurs homologues masculins, les chirurgiennes ont facturé davantage pour des interventions d'oncologie mammaire, des avis et consultations pour cancer et des interventions pour des cancers péritonéaux. De leur côté, les chirurgiens ont facturé pour des ligatures d'hémorroïdes et des proctosigmoïdoscopies rigides plus que leurs homologues féminines. Avec les augmentations d'honoraires ciblées, la disparité salariale selon le sexe s'est accentuée pour 17 des 35 principaux honoraires, mais elle s'est améliorée à divers degrés pour les 18 autres, entre 2010/11 et 2019/20, donnant lieu à une réduction globale de la disparité salariale selon le sexe de 23 % à 15 %. Si on avait appliqué des augmentations généralisées des honoraires plutôt que des augmentations ciblées, la disparité en 2019/20 aurait été de 19 % plutôt que de 15 %.

Conclusion : En Colombie-Britannique, entre 2010/11 et 2019/20, les augmentations ciblées des honoraires ont réduit la disparité salariale entre les hommes et les femmes qui exercent en chirurgie générale comparativement à des augmentations généralisées théoriques, mais non de façon uniforme; certaines augmentations d'honoraires ont aggravé la disparité. D'autres groupes de médecins gagneraient à procéder à une analyse similaire et à appliquer d'éventuels changements d'honoraires de manière à atténuer et non pas aggraver la disparité.

In 2021, Doctors of BC (DoBC), the medical association for all physicians in British Columbia, provided the economics committee of each specialty section with Medical Services Plan payment data from fiscal year 2019/20 by physician sex. This revealed a 19.7% disparity between female and male general surgeons billing more than $150 000 per year, excluding those above the 90th percentile. Historical data showed a disparity as high as 30% in 2012/13. This is in keeping with other studies that show female surgeons earn 24% less per hour than male surgeons.[1] This prompted us to conduct a deeper analysis of current billing patterns, historical trends over 20 years and the effect of target fee increases over the past 10 years.

Pay disparity between female and male surgeons is a complex issue with many contributing factors.[1–5] We were not able to find any other studies looking at individual fee codes and the impact of fee allocations on disparity by sex with respect to payment.

We hypothesized that fee allocation decisions made in the past 10 years have unintentionally helped to mitigate the pay disparity by sex; several new fees had been introduced, such as a higher consultation fee for malignancy that may have disproportionately benefited female surgeons, but to our knowledge the impact has not yet been analyzed or quantified. In this study, we sought to examine the impact of fee increases such as this using data with more granular detail than the data provided by DoBC, which were based on gross payments and not individual fees.

Methods

We obtained aggregate, anonymized raw data from DoBC, including payments by individual fee codes to members of General Surgeons of BC for fiscal years 2000/01, 2005/06, 2010/11, 2015/16 and 2019/20 to conduct our own analysis. Data were available only by surgeon sex, not self-identified gender.

We selected the top 35 fees (out of more than 600) billed by female general surgeons by payment in 2019/20 for analysis, representing 76.3% of total payments to female general surgeons. The same 35 fees represented 72.0% of total payments to male general surgeons. Initially, we intended to analyze the top 20 fees, but this comprised only 60% of total payments; therefore, more fees were added to increase this percentage. We did not have the resources to analyze all of the more than 600 fees billed by general surgeons in BC.

We calculated the annual payment to the average female or male general surgeon for each individual fee. First, we calculated the proportion of total payments to all female and male general surgeons for each fee in a given fiscal year. Then we multiplied this percentage by the average annual payments to female and male general surgeons as reported by DoBC for the same year (billing more than $150 000 and excluding those above the 90th percentile). We could calculate the pay disparity by sex for each fee code by subtracting the payments to male general surgeons from the payments to female general surgeons. We chose this methodology as we had aggregate data only, not individual billing data per surgeon.

We chose to use the average annual payment data supplied by DoBC that excluded those who billed less than $150 000 per year and those above the 90th percentile to better reflect the typical practice of a general surgeon in BC. These are standard cut-offs that are reported annually by the Medical Services Plan in BC and thus readily available, reflecting a short tail on the low end with semi-retired and part-time surgeons earning less than $150 000 and a long tail with a small number of outliers on the high end of the payment curve.

We performed the same calculation by fee code on historical data from 2010/11 to 2019/20 to analyze for trends. We also analyzed fee values over time.

Finally, we performed a simulation to calculate what the current payments for the top 35 fees would have been if across-the-board fee increases had been implemented rather than targeted fee increases from 2010/11 to 2019/20.

Results

Figure 1, Figure 2, Figure 3 and Figure 4 present aggregate data provided by DoBC. These are data for the province of BC as a whole and do not provide detail in terms of academic versus rural practice or geographic location. Figure 1 shows that the number of female general surgeons in BC billing more than $150 000 annually increased more than 7-fold, whereas the number of male surgeons stabilized and then remained unchanged over the study period. Figure 2 shows that the number of days worked per year equalized over the study period between male and female general surgeons. Figure 3 shows that there was a persistent difference in the number of patients seen per day by male and female general surgeons. Figure 4 shows that the average fee-for-service payments increased 55% for female general surgeons and 62% for male general surgeons from 2000 to 2019.

Table 1 shows the top 35 fees billed by female general surgeons in 2019/20, $19 639 154 out of a total of $25 752 808 that year (76.3%). Table 2 shows the top 35 fees billed by male general surgeons in the same year. Total payments to male general surgeons were $85 020 363.

Overall, there is good correlation between the 2 lists with a few notable exceptions. The breast oncology fees (sentinel node biopsy, partial mastectomy, skin-sparing mastectomy, total mastectomy, fine-wire breast biopsy and axillary dissection) occupy the fifth, 10th, 13th, 20th, 28th and 29th positions, respectively, for female general surgeons. Among male general surgeons, only sentinel node

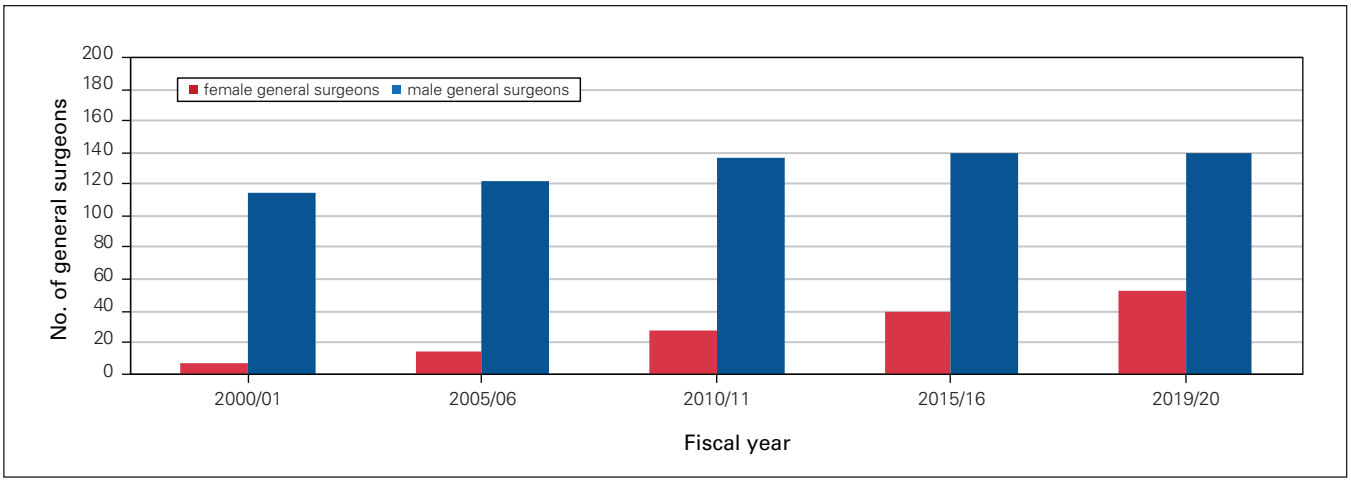

Fig. 1. Number of general surgeons in British Columbia billing more than $150 000 annually (excluding those above the 90th percentile).

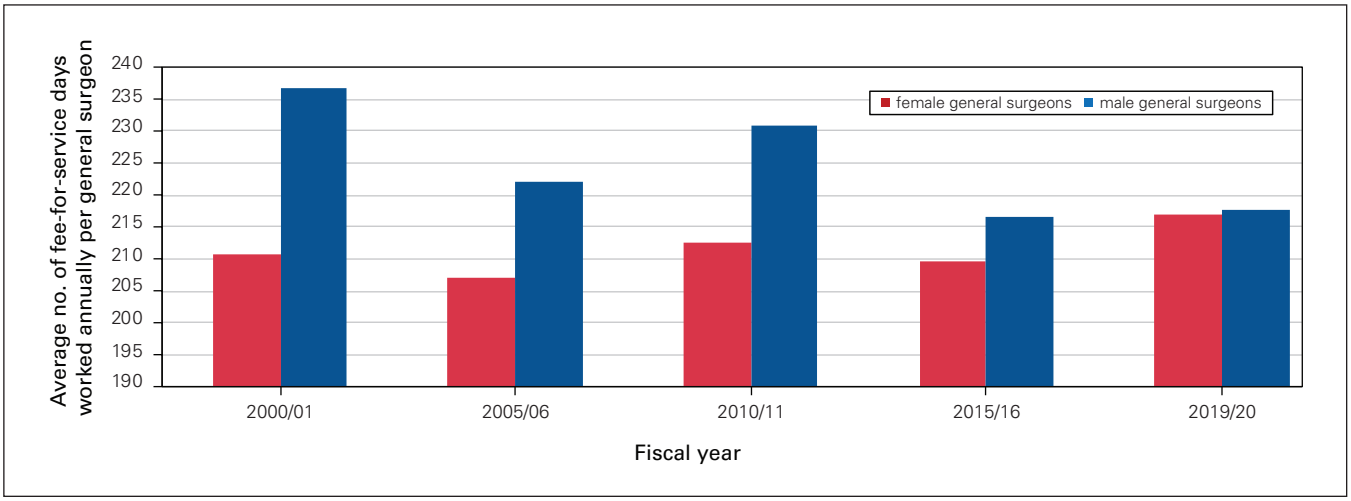

Fig. 2. Average number of fee-for-service days worked per year by general surgeons in British Columbia billing more than $150 000 per year (excluding those above the 90th percentile).

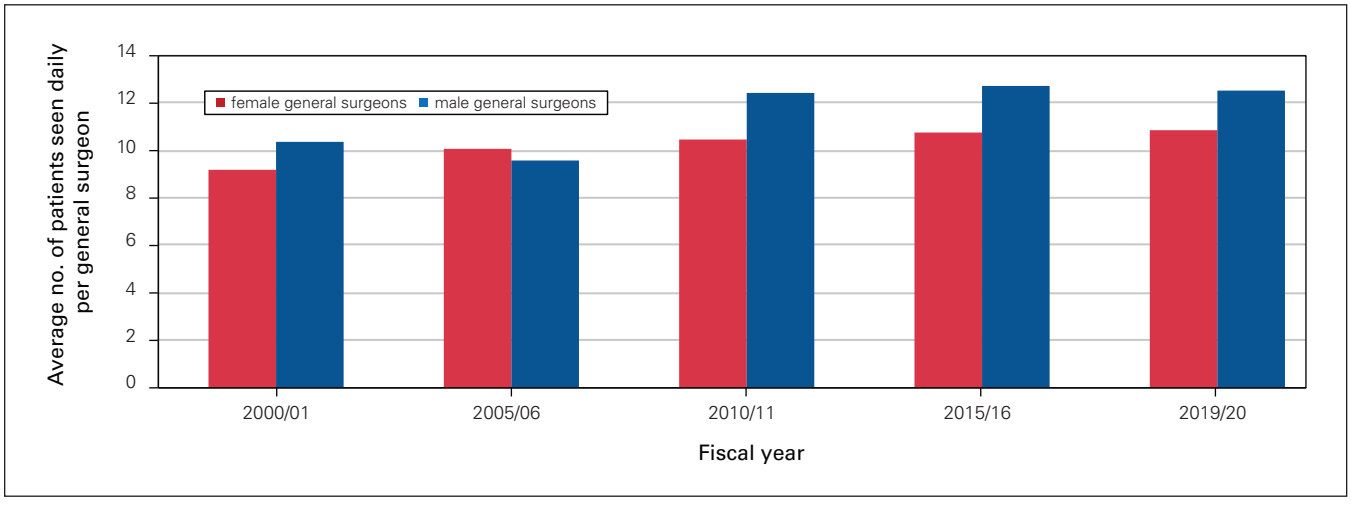

Fig. 3. Average number of patients seen per day by general surgeons in British Columbia billing more than $150 000 per year (excluding those above the 90th percentile).

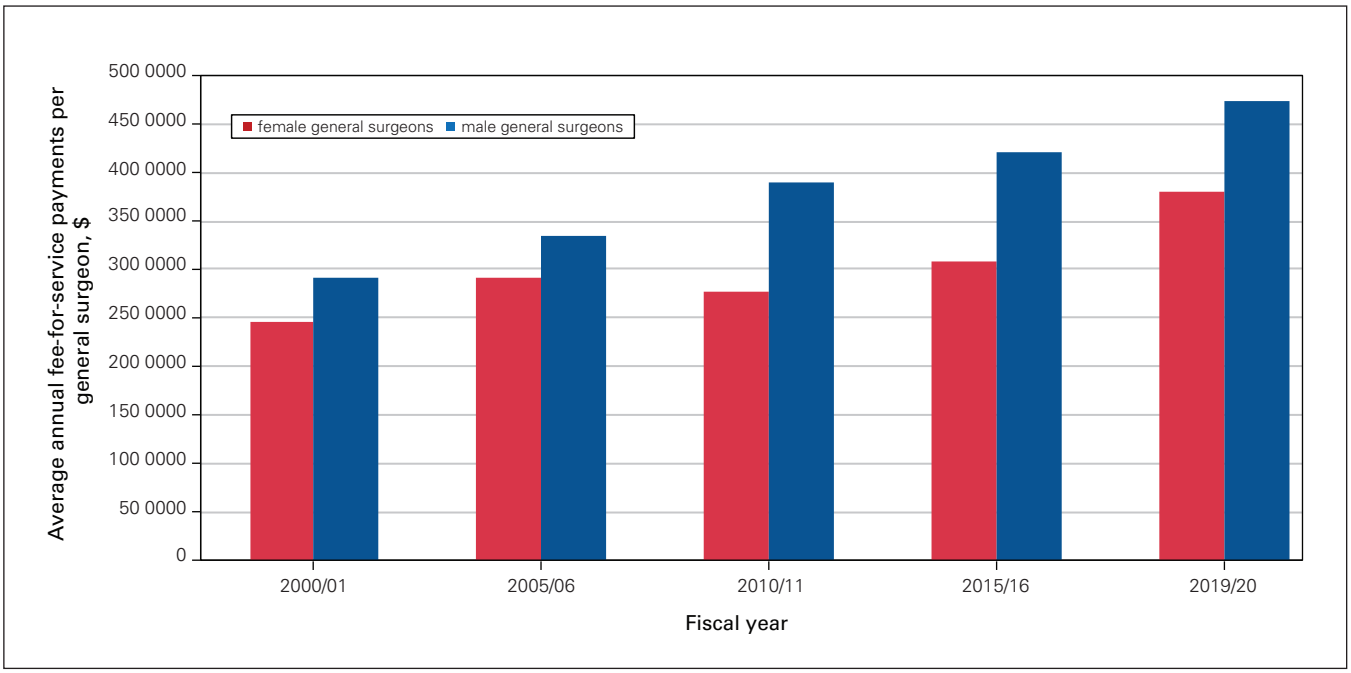

Fig. 4. Average annual fee-for-service payments to general surgeons in British Columbia billing more than $150 000 per year (excluding those above the 90th percentile).

biopsy makes the top 35; it is in the 24th position, 19 positions lower than among female general surgeons. The other breast fees appear much further down for male general surgeons, with skin-sparing mastectomy in the 121st position.

The consultation and office visit fees for malignancy appear in the 8th and 12th positions, respectively, for female general surgeons and in the 13th and 30th, respectively, for male general surgeons. Peritonectomy is 34th for female general surgeons but in the 189th position for male general surgeons.

The reverse situation is seen for hemorrhoid banding, located in the ninth position for male general surgeons and the 27th position for female general surgeons. Rigid proctosigmoidoscopy is 23rd for male general surgeons, along with the associated major tray fee in 20th position. These are in 90th and 70th positions, respectively, for female general surgeons.

Table 3 summarizes the calculated disparity in payments per surgeon for the top 35 fees billed by female general surgeons, comparing 2010/11 to 2019/20. In 2010, female general surgeons received $63 849 less in payments for these fees than male general surgeons, a 23% difference. In 2019/20, this amount decreased to $50 972, a 15% difference. The disparity worsened for 17 fees but improved for the other 18 fees to varying degrees. Colonoscopy and polypectomy had the largest increase in disparity by $10 093, but this was offset by lessening disparities in the other 2 colonoscopy fees. The consultation fee also showed an increase in disparity by $3064. The fees with the greatest improvement or reversal of gender pay disparity were the malignancy consult and visit fees, laparoscopic cholecystectomy, skin-sparing mastectomy and inguinal hernia repair.

The fourth column in Table 3 shows the disparity that would have resulted if fees had been increased by 2% across the board rather than in a targeted fashion, as shown in Table 4. Instead of a difference of $50 972, the pay disparity between male and female general surgeons would have been $59 166 or 19%. For a handful of fees, the disparity would have been lessened with across-the-board increases, most notably the consultation fee and the fee for hemorrhoid banding. However, for most fees, the disparity would have been worse with across-the-board increases. The data show that fee increases predominantly in the malignancy consultation and visit fees, the breast oncology fees and the peritonectomy fee contributed to reducing payment disparity between female and male general surgeons. Increases for fees for other office visits, certified assistant fees, fees for laparoscopic appendectomy and some other fees also made modest contributions to reducing disparity.

In 2018, the decision was made to reduce the colonoscopy with polypectomy fee by 17.8% and the funds were used to increase the consultation fee. In BC, there are separate fees for colonoscopy with and without polypectomy. This reduction in the colonoscopy with polypectomy fee had an interesting effect on pay disparity between male and female general surgeons, decreasing it by almost $6000 per surgeon compared with the amount if this had not been done. This is illustrated in Figure 5.

Increases to the consultation fee, however, increased disparity by about $3500 per surgeon, as illustrated in

Table 1. Top 35 fees billed in 2019/20 by total payments to female surgeons

Fee description	Total payments, $	% of payments
Consultation — general surgery	5 484 981	21.3
Colonoscopy and polypectomy	2 400 629	9.3
Colonoscopy	1 083 166	4.2
Laparoscopic cholecystectomy	1 071 669	4.2
Sentinel lymph node biopsy	880 230	3.4
After-hours surgical surcharge	721 498	2.8
Office visit	655 657	2.5
Consultation for malignancy	605 872	2.4
Postoperative hospital visit	451 062	1.8
Partial mastectomy	435 475	1.7
Esophagogastroduodenoscopy	403 776	1.6
Office visit for malignancy	375 944	1.5
Skin-sparing mastectomy	373 297	1.4
Certified assistant fee	364 915	1.4
Hospital visit	362 645	1.4
Laparoscopic appendectomy	360 617	1.4
Inguinal hernia repair	341 366	1.3
Colonoscopy and biopsy	326 908	1.3
After-hours call-back	301 097	1.2
Total mastectomy	280 231	1.1
Laparoscopic appendectomy — perforated	261 940	1.0
Laparoscopic anterior resection for cancer	239 357	0.9
Laparoscopic right hemicolectomy	208 204	0.8
Partial consultation	158 931	0.6
Surgical surcharge for patient BMI > 35	152 646	0.6
Telephone follow-up	151 396	0.6
Hemorrhoid banding in office	168 557	0.7
Fine-wire breast biopsy	148 200	0.6
Axillary dissection	141 522	0.5
Preoperative assessment	138 075	0.5
Surgical assist over $529	134 510	0.5
Surgical surcharge for patient age > 75 yr	124 435	0.5
Telephone advice	116 203	0.5
Peritonectomy	109 357	0.4
Incarcerated inguinal hernia repair	104 786	0.4

Note: BMI = body mass index.

Table 2. Top 35 fees billed in 2019/20 by total payments to male surgeons

Fee description	Total payments, $	% of payments
Consultation — general surgery	19 079 598	22.4
Colonoscopy and polypectomy	10 506 092	12.4
Colonoscopy	4 911 523	5.8
Laparoscopic cholecystectomy	3 265 564	3.8
After-hours surgical surcharge	2 231 384	2.6
Esophagogastroduodenoscopy	1 737 830	2.0
Office visit	1 693 885	2.0
Colonoscopy and biopsy	1 401 227	1.6
Hemorrhoid banding in office	1 317 395	1.5
Inguinal hernia repair	1 284 746	1.5
Postoperative hospital visit	1 261 542	1.5
After-hours call-back	1 103 464	1.3
Consultation for malignancy	974 747	1.1
Hospital visit	968 415	1.1
Laparoscopic appendectomy	871 708	1.0
Partial consultation	846 740	1.0
Esophageal, gastric or duodenal biopsy	826 382	1.0
Certified assistant fee	821 461	1.0
Laparoscopic right hemicolectomy	809 320	0.9
Major tray fee	729 315	0.8
Laparoscopic appendectomy — perforated	720 030	0.8
Laparoscopic anterior resection for cancer	686 482	0.7
Rigid proctosigmoidoscopy	569 165	0.6
Sentinel lymph node biopsy	541 699	0.6
Incarcerated inguinal hernia repair	476 136	0.5
Surgical surcharge for patient BMI > 35	459 595	0.5
Surgical assist over $529	446 036	0.5
Telephone follow-up	445 413	0.5
Biopsies for Barrett esophagus	403 487	0.5
Office visit for malignancy	387 276	0.5
Preoperative assessment	378 492	0.4
Surgical surcharge for patient age > 75 yr	376 038	0.4
Telephone advice	341 647	0.4
Incisional hernia repair with mesh	340 261	0.4
Umbilical hernia repair	327 701	0.4

Note: BMI = body mass index.

Figure 6. This could be explained by the difference in the number of patients seen per day (Figure 3), resulting in a disparity in payment because of the compounding of this difference over a whole year. In BC, the consultation fee is the same whether it is billed during business hours or after hours. Consults seen after hours are supplemented by a call-back or continuing care surcharge and after-hours surgeries are supplemented by an after-hours surgical surcharge. A special consultation fee for malignancy was created in 2012. Figure 7 shows that this was billed disproportionately by female general surgeons and its creation was a key factor in reducing pay disparity between male and female general surgeons. Figure 8 shows that the office visit for malignancy fee had an even greater impact.

Discussion

The top 35 fees, representing more than three-quarters of total payments, showed improvements in the pay disparity between female and male general surgeons from 2010 to 2019, from 23% to 15%. Although this is better than the 24% disparity previously described in Ontario[2] and the 39% disparity among some surgeons in the United States,[3] we still have work to do to address and eliminate disparity. The 19.7% disparity reported by the DoBC in 2019/20 is more than the 15% that we have calculated, probably because of methodologic differences. The reason for the discrepancy is not clear; it may be because we analyzed only the top 35 fees and not all of the more than 600 fees in the general surgery fee

Table 3. Disparity in payments for the top 35 fees to the average female general surgeon relative to the average male general surgeon in 2010/11 and 2019/20, and the disparity if across-the-board fee increases for the top 35 fees had been implemented in 2019/20

	Disparity in payments to the average female surgeon v. male surgeon, $		
Fee description	2010/11	2019/20	Simulation with ATB fee increases, 2019/20
Consultation — general surgery	–22 290.09	–25 353.66	–21 894.56
Colonoscopy and polypectomy	–13 039.19	–23 132.42	–29 004.10
Colonoscopy	–17 187.15	–11 393.13	–11 509.37
Laparoscopic cholecystectomy	–4977.15	–2372.49	–2455.60
Sentinel lymph node biopsy	8230.96	10 003.66	9918.18
After-hours surgical surcharge	–1632.94	–1780.72	–1780.72
Office visit	–1391.72	246.08	158.06
Consultation for malignancy	NA	3524.76	2262.30*
Postoperative hospital visit	–807.86	–368.04	–266.07
Partial mastectomy	4097.38	5344.32	3818.32
Esophagogastroduodenoscopy	–2839.69	–3727.44	–3724.18
Office visit for malignancy	NA	3401.92	1257.33†
Skin-sparing mastectomy	2610.53	5020.16	4345.06
Certified assistant fee	–304.89	814.25	777.24
Hospital visit	48.75	–39.93	–57.99
Laparoscopic appendectomy	–48.32	470.06	310.21
Inguinal hernia repair	–4183.22	–2121.22	–2059.39
Colonoscopy and biopsy	–9721.52	–2985.64	–3020.49
After-hours call-back	204.69	–1704.99	–1704.99
Total mastectomy	4061.89	2749.66	2722.24
Laparoscopic appendectomy — perforated	59.53	–143.53	–170.45
Laparoscopic anterior resection for cancer	–1423.29	–290.45	–205.30
Laparoscopic right hemicolectomy	–1126.08	–1437.46	–1167.56
Partial consultation	–1043.39	–2375.72	–2104.16
Surgical surcharge for patient BMI > 35	NA	–306.97	NA
Telephone follow-up	243.94	–246.29	–222.09
Hemorrhoid banding in office	–4073.45	–5151.66	–4489.53
Fine-wire breast biopsy	2998.16	1904.93	1794.87
Axillary dissection	3253.60	1452.43	1344.23
Preoperative assessment	NA	–69.77	NA
Surgical assist over $529	–1866.65	–499.69	–480.76
Surgical surcharge for patient age > 75 yr	–586.07	–257.97	–259.91
Telephone advice	–347.39	–187.76	–203.68
Peritonectomy	NA	1405.82	NA
Incarcerated inguinal hernia repair	–767.98	–1107.72	–1092.82

Note: ATB = across the board; BMI = body mass index; NA = not applicable.
*Calculation based on standard consult value, which was billed before this fee was created.
†Calculation based on standard office visit value, which was billed before this fee was created.

schedule. We acknowledge this limitation; however, our findings do agree with those of DoBC in that the disparity has been decreasing rather than increasing since 2010. We have shown that this was a serendipitous result of targeted fee increases.

In 2011, General Surgeons of BC approved a motion at their annual general meeting to allocate new funds to fees that had the greatest difference in value compared with the neighbouring province of Alberta, which was accepted as a gold standard because Alberta's fees were the highest in the country at the time. Fees at parity with or higher than the corresponding fees in Alberta were not allocated new money. Before this motion, fee increases were largely allocated by across-the-board percentage increases to all fees. This new approach largely explains the differences in fee increases from 2010/11 to 2019/20 seen in Table 4, ranging from 0% to 173% increases. Several new fees were also created during this time period, including fees for consultations for malignancy, office visits for malignancy, surcharges for patients with body mass index greater than 35, preoperative assessments and peritonectomy. Fee increases could not be calculated when there was no preexisting comparator.

Table 4. Changes in the payments for the top 35 fees billed by female general surgeons over the study period

Fee description	Payment, $*			Change between 2010/11 and 2019/20, %
	2000/01	2010/11	2019/20	
Consultation — general surgery	94.77	96.07	116.00	20.7
Colonoscopy and polypectomy	312.91	344.79	283.50	–17.8
Colonoscopy	154.65	227.15	231.61	2.0
Laparoscopic cholecystectomy	395.43	519.87	536.09	3.1
Sentinel lymph node biopsy	177.05	465.01	474.13	2.0
After-hours surgical surcharge,† %	32.77 and 52.54	37.78 and 60.57	44.49 and 71.42	17.8
Office visit	18.13	23.82	27.50	15.4
Consultation for malignancy	94.77	96.07	150.00	56.1
Postoperative hospital visit	NA	17.00	27.00	58.8
Partial mastectomy	177.05	232.77	329.57	41.6
Esophagogastroduodenoscopy	78.88	86.92	89.73	3.2
Office visit for malignancy	18.13	23.82	65.00	173
Skin-sparing mastectomy	422.71	555.74	650.00	17.0
Certified assistant fee	191.46	251.70	256.63	2.0
Hospital visit	15.44	20.28	27.50	35.6
Laparoscopic appendectomy	228.51	337.23	480.30	42.4
Inguinal hernia repair	259.32	340.92	364.12	6.8
Colonoscopy and biopsy	209.30	230.62	235.15	2.0
After-hours call-back,†	43.03 and 60.44	58.17 and 81.71	72.17 and 101.35	21.6
Total mastectomy	353.70	465.01	474.13	2.0
Laparoscopic appendectomy — perforated	335.81	495.57	505.30	2.0
Laparoscopic anterior resection for cancer	700.46	1033.70	1617.81	56.5
Laparoscopic right hemicolectomy	549.43	810.82	1033.43	27.5
Partial consultation	42.17	51.74	60.00	16.0
Surgical surcharge for patient BMI > 35, %	NA	NA	25	NA
Telephone follow-up	NA	20.00	24.05	20.3
Hemorrhoid banding in office	NA	79.02	97.40	23.3
Fine-wire breast biopsy	164.73	216.57	232.60	7.4
Axillary dissection	353.70	465.01	507.42	9.1
Preoperative assessment	NA	NA	116.00	NA
Surgical assist over $529	202.93	238.96	260.35	9.0
Surgical surcharge for patient age > 75 yr	NA	80.00	85.00	6.3
Telephone advice	NA	60.00	60.00	0
Peritonectomy	NA	NA	662.77	NA
Incarcerated inguinal hernia repair	300.05	394.48	411.85	4.4

Note: BMI = body mass index; NA = not applicable.
*Unless indicated otherwise.
†The first value in each cell is for evenings and weekends, and the second value is for nights.

Why there was a disparity in colonoscopy and other endoscopy fees is unclear. Other studies have reported that male surgeons are preferentially referred patients who require more remunerative procedures.[1] It is also possible that female surgeons are not allocated a proportional amount of resources for endoscopy, but investigating this possibility was beyond the scope of this study.

Pay disparity by sex is multifactorial. First, as we have demonstrated, there are substantial practice differences between female and male general surgeons, illustrated by fees for breast oncology and hemorrhoid banding. The reasons for these differences are complex, involving training motivations and influences from medical school through residency and fellowship and biases in recruitment and hiring.[4] Practice and lifestyle decisions are also a factor, but we did not address this in our study. Second, there are changes in practice over time. For example, the volume of breast biopsies and total mastectomies has decreased over time, the volume of partial mastectomies has increased, the volume of open appendectomies and colon resections has decreased and the volume of laparoscopic procedures has increased. Third, there are structural or systemic factors; these include equitable allocation of resources such as operating room or endoscopy time as well as referral bias.

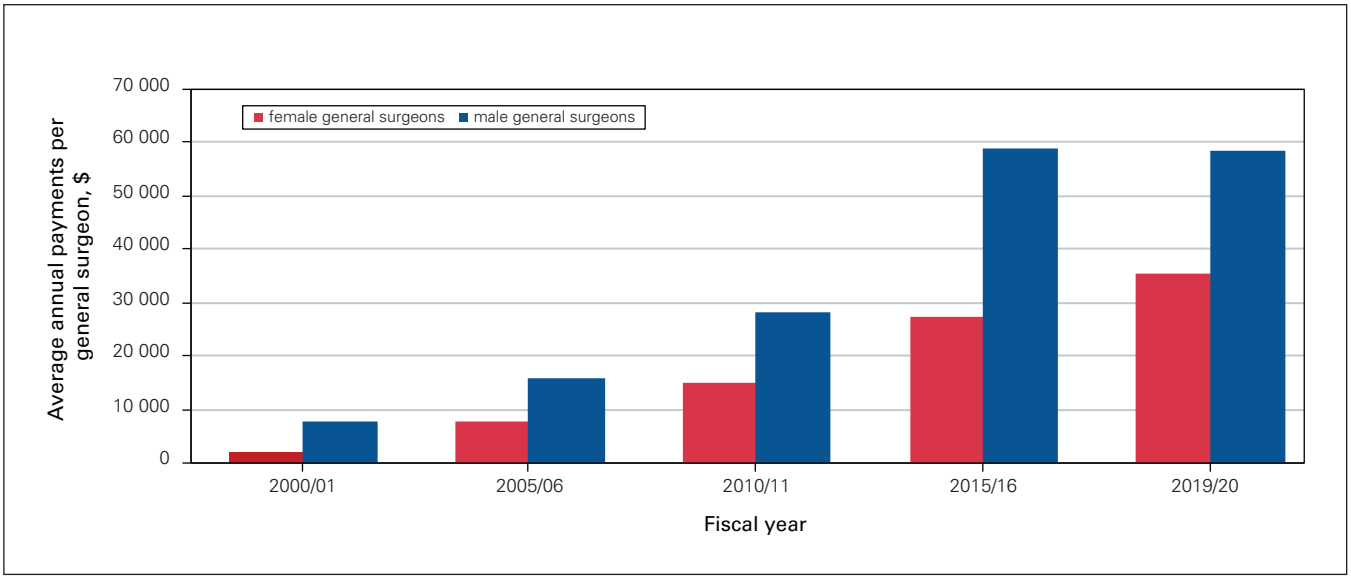

Fig. 5. Average annual payments per surgeon for colonoscopy with polypectomy (calculated from raw data). All general surgeons were included in the analysis in this figure.

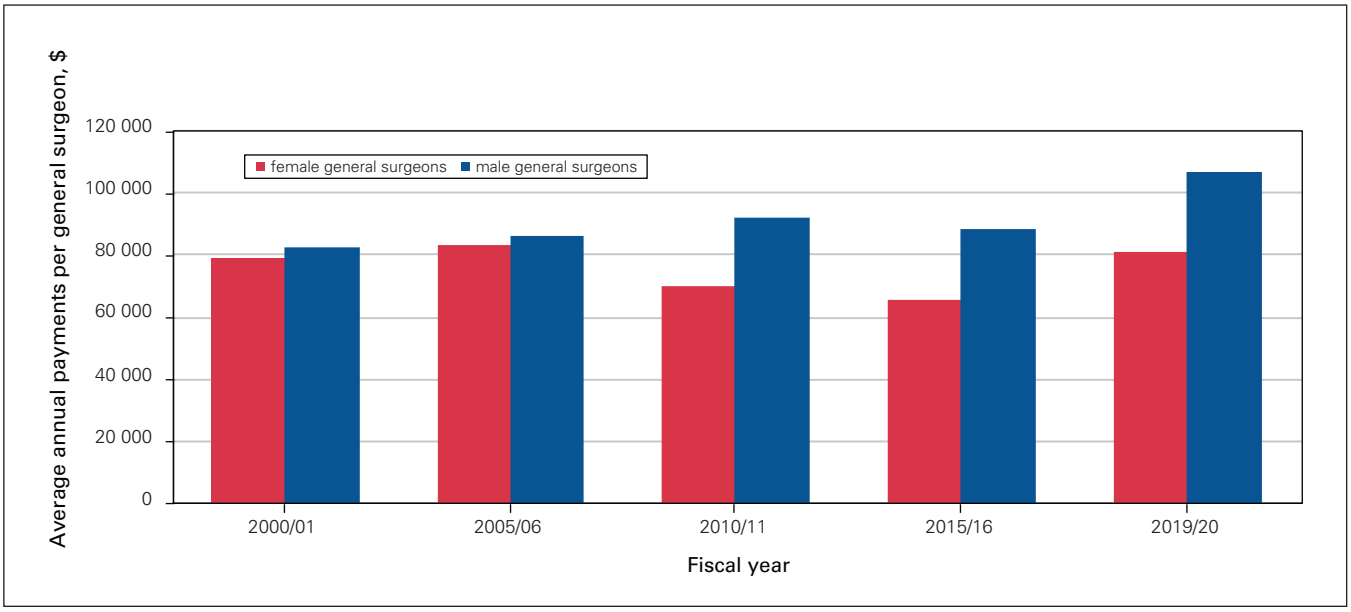

Fig. 6. Average annual payments per surgeon for consultation (calculated from raw data). All general surgeons were included in the analysis in this figure.

Referral bias has been reported to be a cause of pay disparity by sex because of more nonoperative referrals being sent to female surgeons.[2] Previous studies have shown that female physicians spend 10% more time than male physicians in medical visits.[5] Moreover, oncology consultations, predominantly for breast cancer, take longer than consultations for other conditions. This contributes to female surgeons seeing fewer patients per day, even though they work the same number of days per year as their male colleagues. This structural or systemic bias is more difficult to correct with fee increases alone and requires other interventions such as proportional resource allocation,[6] centralized referral models,[7] shared care protocols and education of referring physicians.

Residency education may also help reduce pay disparity by sex. For example, opportunities could be offered to enable male residents to develop skills and interest in breast surgery and female residents to develop skills and interest in endoscopy and hemorrhoid banding. This requires further study.

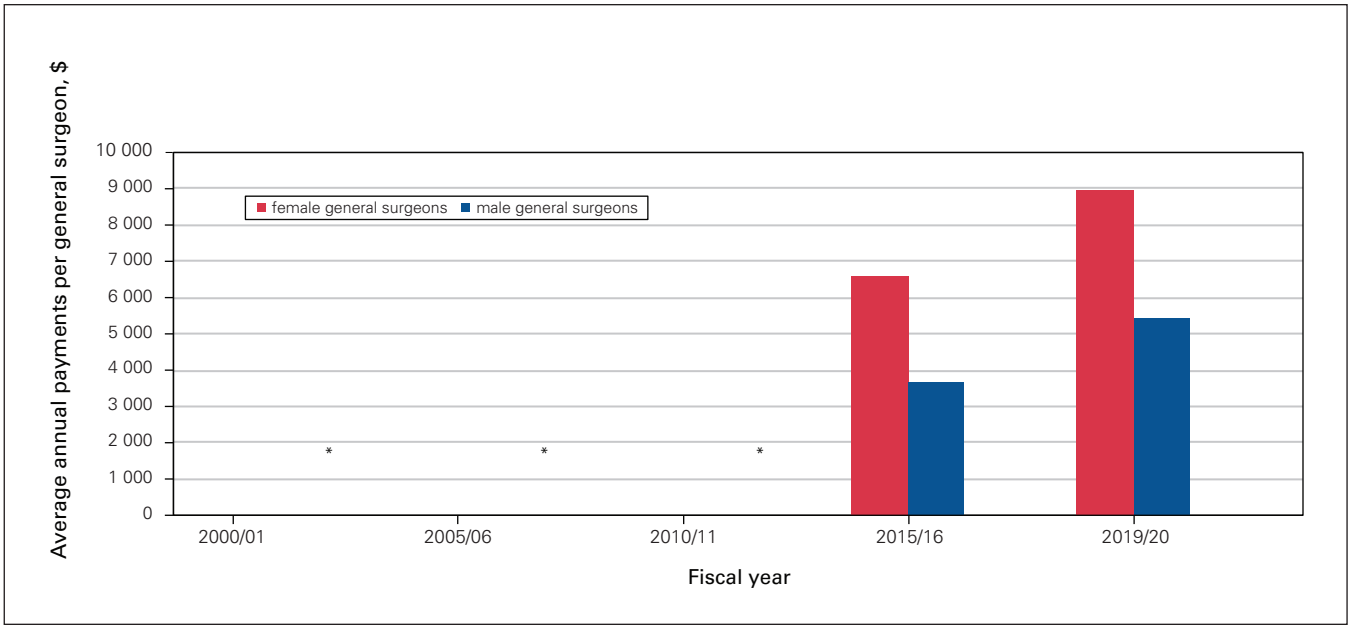

Fig. 7. Average annual payments per surgeon for consultation for malignancy (calculated from raw data). All general surgeons were included in the analysis in this figure. *There are no data for these years because this fee was created in 2012.

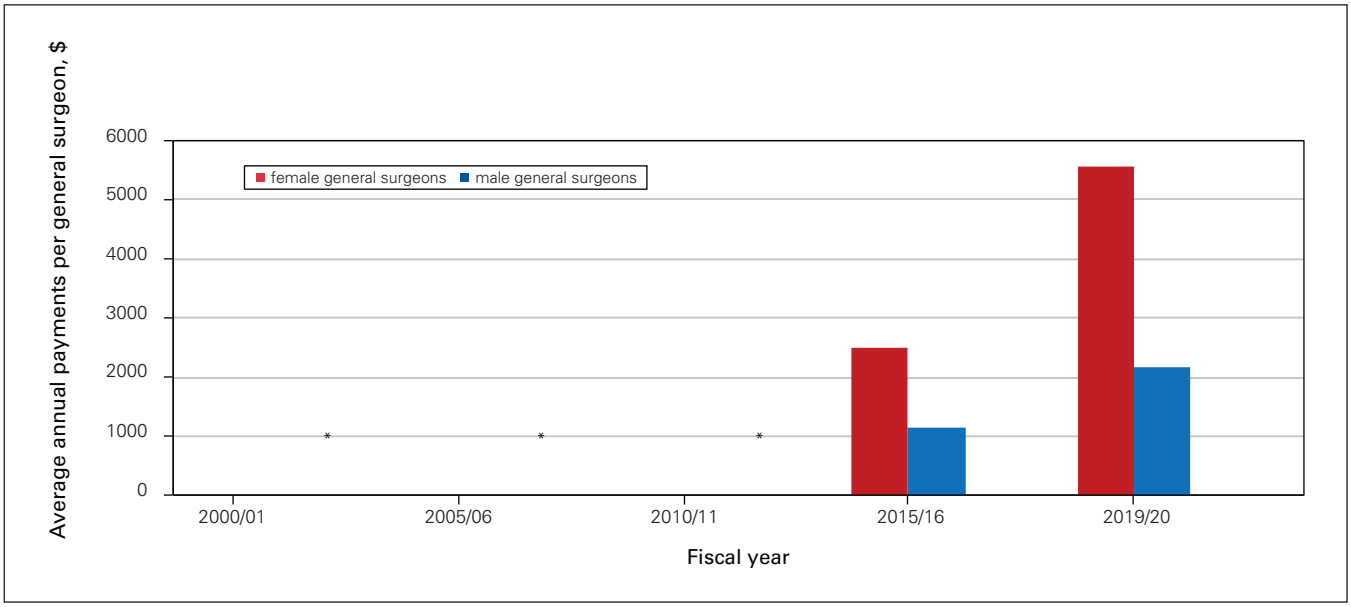

Fig. 8. Average annual payments per surgeon for office visit for malignancy (calculated from raw data). All general surgeons were included in the analysis in this figure. *There are no data for these years because this fee was created in 2012.

Limitations

We acknowledge that this study is limited in that we had access only to aggregate and raw billing data and were not able to identify or analyze subgroups, including subspecialties. Practices may also differ by geographic location and practice type. For example, an academic breast oncology practice in Vancouver that does not offer endoscopy would be very different from a community general surgery practice in Powell River, BC. We did not have access to a breakdown of the reasons for consultations, which would have helped to illuminate operative versus nonoperative referrals. In addition, it is unlikely that 60 female surgeons are each performing 2 peritonectomies a year; it is more likely that 3 female surgeons are performing 40 a year (and the rest are not performing any). As a result, our conclusions are limited to the "average" female or male surgeon.

Conclusion

We have shown in this study that choices in fee allocation have a significant impact on pay disparity between female and male general surgeons. Moreover, across-the-board increases across a set of fees exacerbate existing disparities. As a result of this study, General Surgeons of BC allocated retroactive fee increases from April 2021 after first calculating their impact on pay disparity by sex and made adjustments that, overall, reduced disparity. A specific example is an increase to several breast surgery fees. We plan to perform similar analyses for all future fee increases. We have also endeavoured to achieve sex balance on the economics committee of General Surgeons of BC that oversees these decisions. We encourage other physician groups in BC and across Canada to undertake a similar analysis of their fee schedules and make fee allocation decisions that do not worsen pay disparity by sex.

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Competing interests: None declared.

Contributors: H. Hwang, A. Barton, D. Jenkin designed the study. T. Scott analyzed the data. H. Hwang and D. Jenkin wrote the article, which H. Hwang, A. Barton and T. Scott critically revised. All authors gave final approval of the version to be published.

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