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PERSPECTIVES ON WORK-HOUR RESTRICTIONS AMONG GENERAL SURGERY RESIDENTS

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Abstract
The researchers were keen to learn what general surgery physicians think about the idea of restricted work hours. The survey examined what residents think about the effects an 80-hour workweek might have on how long it takes to train, gain surgical experience, get an education and on total well-being. Responses from senior and junior residents were compared by using Fisher's method. The survey results include 158 replies from 360 residents in the community: 70 from seniors and 88 from juniors. A large portion, 79%, said they worked between 75 and 100 hours each week. A lower percentage of juniors (43%) believed reducing work would reduce their chance to perform surgery than did senior residents (74%) ($p < 0.001$). A majority from both groups thought cutting work hours would make their lives better (86% vs. 96%, $p = 0.12$). Most residents, at 60%, said they did not expect longer training because of the new rules. About half of juniors thought that 24-hour shifts were bad for their health, but only a quarter of seniors agreed ($p = 0.001$). Still, both sides agreed that removing overnight surgery could decrease surgeons' risk of exposure (84% vs. 70%). Fewer than one-third of people in the area backed the idea to no longer have emergency care available around the clock. In addition, 47% (41% of seniors, 51% of juniors, $p = 0.26$) expressed agreement with the suggestion of working 80 hours weekly. Senior general surgery residents in Canada see the rules about work hours differently than junior residents. Even though some believe in limiting workweeks, neither group is really in favor of the 80-hour workweek or bringing back 24-hour call.

Key words: Work-hour restrictions, General surgery residency, Surgical training, Resident perceptions

Introduction

Following the adoption of automated patient care time limits in July 2003, many general surgery training programs were structured differently. The limits were put in place principally to ensure patients were not at increased risk if residents had not slept enough. Still, there is ongoing discussion about the rules. Questions are being raised about whether general surgeons of the future will gain the necessary experience and training. Besides, clear proof showing that these policies result in better patient health outcomes is still missing. Limiting how long residents work may decrease fatigue-induced mistakes, but it is linked to increased problems in team communication and less continued care. To meet these new rules, FP residencies and hospitals have provided extra funding, for example, by introducing a night float system and recruiting additional staff who aren't

doctors to cover some of the lost resident workload. Work hours for residents are not controlled by any national rules right now, but groups are now discussing this at the provincial and national levels. A complete look at how patients do, how much surgery is done and the effects on the overall system should happen before making these policies. Still, not much research has been done on the views of trainees about these rules and how their education programs have responded. In a survey of U.S. surgical residents, 41% admitted that restrictions on their work hours interfered greatly with their learning and 44% adopted the view that a 80–100-hour workweek is most suitable. The study looked at what general surgery residents think about limits on work hours and the practice of using night floats.

Methods

Once approved by the ethics board and supported by the General Surgeons Committee, we sent out a 27-question survey on the web to each of the general surgery residents. All except one residency program provided information for the survey. Residents were asked about how work-hour limits might change their training duration, the time spent operating, learning and their everyday life. Participants responded to each question with a number on a scale from 1 to 5 (1 = strongly agree, 5 = strongly disagree). Senior residents in training from PGY 4 and 5 were compared with less experienced junior residents in PGY 1, 2 and 3. Fisher's exact test (two-tailed) helped identify whether differences between groups were significant, only noticing differences below $p = 0.05$ as statistically significant.

Result

The survey shows that surgical residents have different views on both the 100-hour limit and staying awake for 24 hours on call. A majority (60%) of all participants said they think the limit on 100-hour workweeks results in less operative experience and this view was stronger among senior residents (72%) than junior residents (46%) ($p < 0.001$). Furthermore, almost half of the respondents stated that the restriction worsens their chance to learn, without a meaningful difference between students ($p = 0.35$). Most (87%) found the hard limit to be better for living, but there was not much difference between seniors (85%) and juniors (95%) ($p = 0.24$). Restricting the number of weekly hours worked was considered a way to recruit and keep residents. Juniors (68%) saw it this way more than seniors (41%) ($p < 0.001$). According to the survey results, half of all respondents felt that working a 100-hour workweek would keep them from accomplishing all Royal College requirements in five years ($p = 0.04$) and almost a third expected residency to extend to seven years ($p < 0.001$). It was found that 87% of respondents claimed a seven-year residency would prevent many from applying to general surgery and 81% said the same length could deter residents from selecting a fellowship ($p = 0.30$). Just 46% were for making residents work a hundred hours a week and this difference was not significant between senior and junior residents ($p = 0.12$).

Half of all residents saw 24-hour call as a risk to their health and this view was especially high among juniors ($p < 0.001$). Less than half (42%) thought it was a risk to patient safety and junior doctors (52%) agreed more often than seniors (31%) ($p = 0.04$). When local programs were asked if a night float system could be established, only 33% agreed and there wasn't any significant difference between groups ($p = 0.43$). Almost two thirds (62%) of students think getting rid of 24-hour call would affect their learning, with seniors saying yes more often (72%) than juniors (43%) ($p = 0.002$). A majority, 71%, said that getting rid of the system might lessen their experience in the operating room. In contrast, 72% of respondents said getting rid of 24-hour call would enhance their lifestyle, with juniors agreeing much more than seniors ($p = 0.03$). In addition, more than half of participants said that eliminating 24-hour call would be helpful for attracting residents and juniors were more likely to believe this (54%) than seniors (42%) ($p = 0.002$). Only 32% agreed to abolish 24-hour call when the question was asked, with juniors being much more in favor (44%) than seniors (24%) ($p = 0.003$).

Table 1: Canadian surgical residents' opinion regarding the 100-hour work week

Statement	**Group; % agreement**			***p* value**
	All, *n* = 180	**Seniors, *n* = 85**	**Juniors, *n* = 95**	
100-hr wk limitation decreases operative experience	60	72	46	< 0.001
100-hr wk limitation decreases learning experience	48	48	49	0.35
100-hr wk improves lifestyle	87	85	95	0.24
100-hr wk attracts and retains more residents	62	41	68	< 0.001
100-hr wk prevents from completing Royal College requirements within 5 years	42	51	41	0.04
100-hr wk will extend residency 7 years	37	37	30	< 0.001
7-yr residency would have dissuaded me (the participant) from applying to general surgery	87	94	90	0.07
7-yr residency will dissuade residency from applying to fellowships	81	94	91	0.30
Agree with enforcement of the 100-hr wk in Canada	46	40	50	0.12

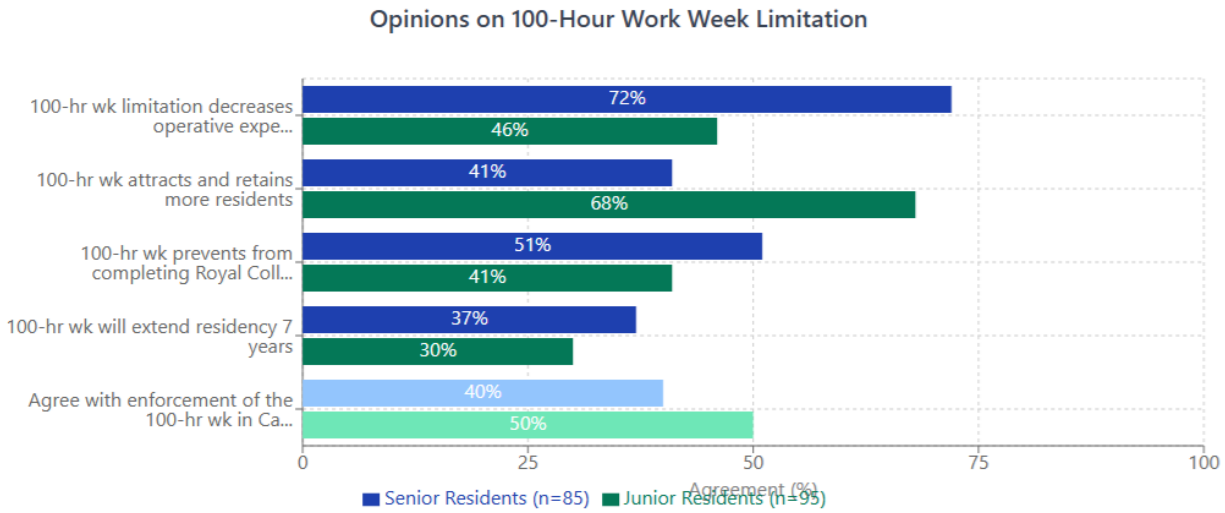

Figure 1: Canadian surgical residents' opinion regarding the 100-hour work week

Table 2: Canadian surgical residents' opinion regarding 24-hour call

Statement	**Group; % agreement**			***p* value**
	All, *n* = 180	**Seniors, *n* = 85**	**Juniors, *n* = 95**	
24-hr call is hazardous to your health	51	35	61	< 0.001
24-hr call is hazardous to the health of your patients	42	31	52	0.04
Establishing a night float system is practically feasible in your program	33	31	24	0.43
Abolishing 24-hr call decreases learning	62	72	43	0.002

experience				
Abolishing 24-hr call decreases operative experience	71	82	70	0.12
Abolishing 24-hr call will improve lifestyle	72	62	84	0.03
Abolishing 24-hr call will attract and retain more residents	51	42	54	0.002
Do you agree with abolishing 24-hr call	32	24	44	0.003

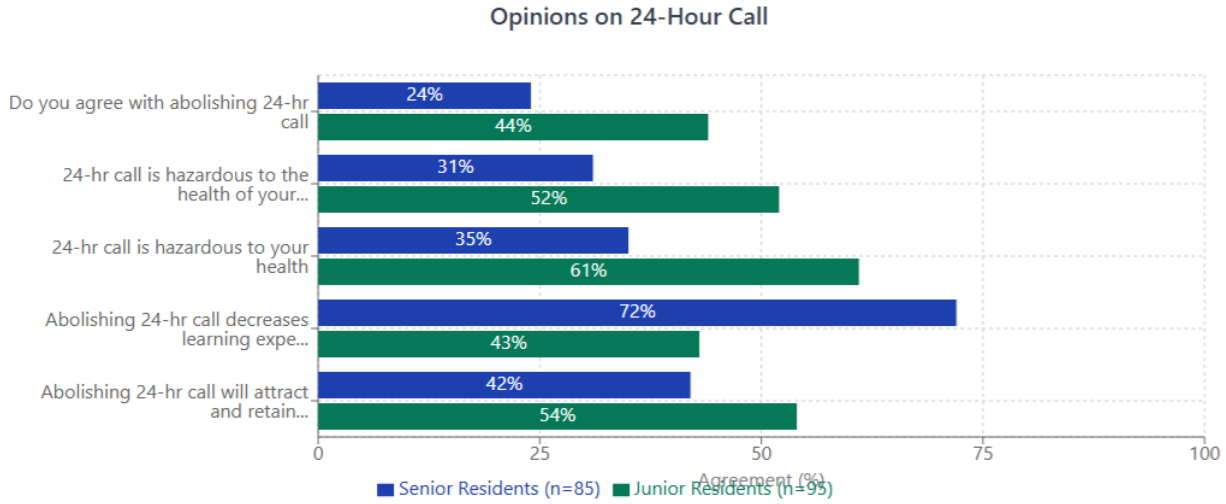

Figure 2: Canadian surgical residents' opinion regarding 24-hour call

DISCUSSION

We understand that getting only 44% of the residents to respond may be due to the online format, not enough time for participants or not many people interested in residency education. Our research points out several important ways that work-hour restrictions are viewed by Canadian general surgery residents. Since the majority of residents are working 75 to 100 hours weekly and 15% more, training would have to be adjusted significantly if the workweek was shortened to 80 hours. Even so, opinions about the issue are still divided, as 47% prefer the new approach and there is little difference between the senior and junior population. Experts worry that work-hour restrictions may lead to less experience in surgery and fewer chances to learn. Decreasing the amount of surgical time given to residents may have major effects on future surgeons. Our reports find the same as past studies, showing that senior residents have greater concern than juniors about getting enough surgical experience. Many worry because seniors are exposed to many surgical cases as they practice the necessary skills on their own, ready for future surgery without a supervisor. Of those surveyed, 74% of senior residents believed work-hour restrictions could reduce how much they operated and 52% said such rules might hinder them from meeting Royal College of Physicians and Surgeons training targets. According to Kairys et al., chief residents' surgical exposure was cut by 8.3% after the new workhour rules were put in place. Teaching assistant (TA) roles, where senior residents teach juniors during surgeries, play a vital part in helping TA-s gain skills, participate in key decisions and develop teaching skills. Certain studies found a big fall in TA cases: between 42% and 78% after counting restrictions were introduced. First-assistant roles designed for junior residents are down by up to 81%. Some research indicates that older residents handle instances that the young residents are usually responsible for. The push to work longer surgerons may not leave time for other valuable means of learning, like outpatient clinics, consultations and teaching by the bedside. According to director surveys in the U.S., bedside teaching dropped by 68% after new limits were placed on residents' work schedules. In another study, fewer residents were seen in outpatient clinics. As medical students lose interest in surgery, junior residents were significantly

more likely than seniors to feel that an 80-hour limit would make recruiting and retaining surgical residents easier ($p < 0.001$). More juniors felt a night float system would appeal to a greater number of applicants (58%) when compared to seniors (44%) ($p = 0.005$). Many people hesitate from general surgery because it's demanding and unpredictable, but research shows that personality, future earnings, debt from medical training, gender and having a mentor can also shape a person's decision. Because of fewer training opportunities, it is suggested that completing general surgery training requires seven years. Still, there are drawbacks to this method such as the change in number of applicants and the impact on subspecialty training. Nearly half of the senior residents and over a third of juniors raised concerns that the new training model takes longer ($p < 0.001$). A high percentage of both groups agreed that making residency longer would stop applicants from applying and influence the decision of current residents to apply for fellowships. The initial reason for work-hour restrictions was that medical errors might happen because doctors were exhausted. Even so, opinions about 24-hour call differed among residents and only 30% of seniors felt it could be risky, while 60% of junior residents thought so ($p < 0.001$). Similar results were found for seniors (35%) and juniors (54%), who believed that 24-hour shifts might put patients at risk ($p = 0.05$). Although a few studies found improved results for patients after limitations were put in place, the evidence is generally uncertain. A study that looked back at data found lower 30-day mortality, from 1.96% to 1.10%, after work hours were modified, but because more staff and attending physicians joined in, it was hard to tease out the precise impact of work-hour limitations. Nevertheless, researchers have discovered that imposing limited work hours on surgeons can lead to more complications and more cases where patients are readmitted, as a result of decreased communication and less involvement by residents. Introducing a night float system would force changes to the way residency programs are planned and organized. In this survey, 36% of residents said they thought it could be put in place at their own programs. Because many view night float as less busy, about 72% of residents felt it would lead to them seeing fewer cases and 64% were concerned they would not gain much from missing daytime activities. Residents assigned to night shifts (senior residents) performed fewer procedures annually (224 procedures) than residents assigned to day shifts (276 procedures, $p < 0.05$). 1 institution that returned to 24-hour shifts after trying night floats found that their residents enjoyed more learning opportunities, were more held accountable and had higher morale. Despite the concerns we heard about the system, 1 in 5 people 65 and over and nearly half of junior residents still supported adopting it ($p = 0.007$). A research team led by Bollschweiler found that working eight hours rather than twelve in an intensive care unit was linked to longer hospital stays and more complications. The authors pointed out that developing a "shift mentality" and promoting personal involvement by patients are key to keeping healthcare professionals reliable and on track.

Conclusion

Work-hour rules are still a subject of contention among both surgeons-in-training and surgeons who teach them. It is important for residents' opinions to be included as experts continue to consider how to limit. There is no common agreement among both senior and junior residents about whether a 80-hour workweek is a good idea, according to our survey. Still, most staff were not in favor of switching to a night float system due to fears of less exposure and fewer learning chances during the night. This study found that general surgery residents view work-hour restrictions differently. Although reduced hours create benefits for many residents, people in the field are concerned about effects on learning how to operate. Elderly residents are mostly concerned that less time in the hospital will make it tough for them to gain experience and complete all their required training. The findings suggest that, unlike their senior colleagues, junior residents think work-hour limits are helpful for attracting more junior staff members, helping them stay longer and boosting their well-being. Another concern about new scheduling approaches like night float rotations is how to make sure resident wellness doesn't conflict with their valuable training. Although some studies suggest that less work could mean fewer mental lapses, concerns about a drop in practice and no harm to patients are still a big issue. Lengthening residency programs to overcome fewer work hours could make fewer people want to apply and have less chance to get fellowships in the future. In short,

these results prove that creating well-designed policies is important to meet both patient and educational requirements. Researchers should investigate various models for training that last for years and could affect results for patients, along with flexible scheduling options. For strategies to last, it will become essential to ensure that the responses to surgical training challenges are shaped by the active participation of residents.

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