

# Benefits of Correctional Psychiatry Teaching and Clinical Exposure for Third-Year Medical Students

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Medical students have limited exposure to correctional health, and their attitudes toward inmates are understudied. We investigated medical students' attitudes toward inmates, assessing whether an intervention can improve their understanding of the correctional system and help them develop more positive attitudes toward inmates. One hundred thirty third-year medical students at the University of Ottawa attended a one-hour lecture on correctional health and adverse childhood experiences (ACEs) and subsequently observed a three-hour correctional telepsychiatry clinic during their clerkship psychiatry rotation. Students completed a preintervention and postintervention questionnaire that included a modified 20-item Attitudes Toward Prisoners (ATP) scale (quantitative) and feedback questions (qualitative). Of 130 students who completed the preintervention questionnaire, 106 completed the postintervention questionnaire (81.5%). Students' mean total modified ATP scores increased significantly after our intervention, from 72.8 to 78.4 ( $p < .001$ ). Fourteen of 20 ATP items increased significantly, reflecting greater understanding of the correctional system and more positive attitudes toward inmates. Thematic analysis of qualitative feedback revealed students gained a better understanding of the correctional system and increased comfort treating inmates. Scarce criticism included minimal interactivity and a desire for more sessions. Although students perceived benefits, further research is required to determine its educational significance.

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Over the past decade, medical education has been moving toward greater social accountability, where medical schools have been encouraged to develop programs that respond to local priority health needs. This increased emphasis is intended to foster students with attitudes that will address health inequities. Internationally, it has been recognized that individuals in correctional facilities are a health priority, including those who have returned to the community.<sup>1–3</sup> With a high burden of disease and limited access to care, both during incarceration and after reentry, the incarcerated

population is among the most vulnerable in North America.<sup>4–6</sup> This vulnerability has largely been unaddressed within medical school curricula, including in Canada. Although correctional health training programs for resident and staff physicians exist,<sup>4,7–10</sup> medical students generally have little exposure to this area, despite potential benefits to junior trainees.<sup>11,12</sup>

Two comparable studies providing senior medical students with an optional correctional clinical experience showed that students positively viewed these experiences and expressed interest in working within this vulnerable population.<sup>13,14</sup> Another study interviewed medical students who participated in an optional clinical placement in a correctional health setting as well as medical educators involved in the area of correctional health, and researchers found that, despite some apprehensions, students largely found this experience beneficial and insightful.<sup>15</sup> Within Canada, Filek *et al.*<sup>16</sup> (of the University of

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British Columbia's medical school) evaluated medical students' exposure to prison health, which included a select number of students who had signed up for this elective. They found that participation in this elective generated further interest in this population group and a greater sense of social accountability.

These studies largely involved self-selected groups of students who likely already had some interest in this patient population, and nearly no medical schools mandate any clinical experience in a jail or prison. One exception is the University of Texas Medical Branch at Galveston (UTMB), as it hosts the only dedicated prison hospital in the United States and nearly all medical learners care for this vulnerable population.<sup>17</sup> Hashmi *et al.*<sup>17</sup> provided insight into the ethics challenges experienced by medical students, such as biases against incarcerated individuals and concerns for patient autonomy in this setting. This highlights a clear need for further research in correctional health teaching in medical school. In addition, it is recognized that there is serious stigma that can adversely affect the health care provided to this population,<sup>18</sup> further pointing to a need for early intervention during medical training.

A review of the objectives of training within all 17 Canadian medical school programs did not show any objectives pertaining to correctional health, although the concept of social accountability was present in nearly all programs. The University of Ottawa's medical school, however, had recently updated their objectives of training to include correctional health as well as adverse childhood experiences (ACEs), which needed to be incorporated into the medical school curriculum. Faculty at the University proposed that the Department of Forensic Psychiatry would be the best equipped department to promote social accountability and provide teaching about correctional health and ACEs.

There is an important correlation between ACEs and incarceration. Felitti *et al.*<sup>19</sup> were the first to conduct a prospective study assessing the extent to which ACEs affect later adulthood dysfunction. Along with finding a correlation between ACEs and numerous negative outcomes, it was demonstrated that ACEs are highly interrelated and have a cumulative effect. Other adverse outcomes, such as substance use or mental illness, could also have repercussions for incarceration as juveniles or adults.<sup>20</sup> In a study of offenders in young adulthood (aged 18-25 years old), childhood adversities were markedly common, with

a prevalence of 89 percent,<sup>21</sup> more than double the rate reported in the general population, estimated to be between 29 and 43 percent.<sup>22-24</sup> Despite this, the high prevalence of ACEs in the incarcerated population is not well known to the public, which is of relevance to medical learners.

The Department of Forensic Psychiatry set out to incorporate a correctional health exposure experience for all clerkship medical students at the University of Ottawa and implemented a mixed-methods approach to research the impacts of this experience on students' understanding of the correctional system and their attitudes toward inmates. We hypothesized that a two-part intervention focusing on teaching medical students about ACEs, the correctional system, and mental illness within the prison population would significantly improve their understanding of the correctional system, lead to a more positive attitude toward inmates, and ultimately increase their willingness to care for incarcerated patients in their future practices.

## Methods

### Intervention Design

Ethics approval was obtained through the Royal Health Care Group Research Ethics Board, protocol ID number 2019026. We designed a two-part intervention regarding ACEs, correctional health, and mental health care within the prison system. The first part was a didactic lecture on correctional health and ACEs. This was a one-hour lecture focusing on the foundational research on ACEs, the structure of the correctional health care system in Canada, and the intersection between ACEs and incarceration. The lecture was delivered by the corresponding author of this study. The second part consisted of observing a correctional telepsychiatry clinic. After the lecture, all students were expected to observe a three-hour-long correctional telepsychiatry clinic, led by the corresponding author of this study at The Royal Ottawa Mental Health Centre. To facilitate this, multiple sessions were arranged for each group of students at each hospital site to minimize disruptions in their clinical responsibilities and to promote a group-based discussion after each case.

### Participants

All medical students in their third year of medical school at the University of Ottawa (approximately

170) were expected to attend a two-part intervention during their core six-week psychiatry rotation.

### Data Collection

We measured students' perceptions of correctional health and attitudes toward inmates pre- and post-intervention to assess the efficacy of our experimental design. We elected for a mixed-methods approach involving a quantitative survey to be completed both before and after the intervention, as well as a qualitative analysis of students' feedback after the intervention.

A literature review failed to reveal any standardized or validated questionnaires assessing medical professionals' views toward the correctional system or inmates. An instrument designed by Melvin *et al.*<sup>25</sup> assesses general attitudes toward prisoners. The 36-item Attitudes Toward Prisoners (ATP) scale has demonstrated good psychometric properties.<sup>25,26</sup> The majority of questions in the ATP scale are geared toward correctional officers, however, as opposed to medical professionals. We adapted this questionnaire to focus more on health care and the medical needs of inmates (Table 1). We maintained the Likert-type scale used in the original ATP questionnaire, where respondents rate their agreement with each statement on a scale of one (strongly disagree) to five (strongly agree). We condensed it to a total of 20 items, where seven questions pertain to subjective attitudes toward inmates and the criminal justice system as a whole (loosely adapted from the ATP scale). The remaining 13 questions assess the medical students' objective knowledge of the correctional system. Our modified ATP scale generates a total score between 20 and 100, where a higher score indicates a more empathetic attitude toward the incarcerated population and a better understanding of the correctional system.

We asked students to anonymously complete the modified ATP survey online at two time points: prior to the didactic lecture (preintervention) and after attending the correctional telepsychiatry clinic (post-intervention). Only students who completed the pre-intervention questionnaire were invited to complete the postintervention questionnaire. The postintervention survey included two qualitative questions asking for the medical students' feedback: "Will this clinical experience affect your practice and clinical interests? How?" and "Is there anything you would suggest that could improve education about the correctional population and/or Adverse Childhood Experiences?" The first question is intended to assess students'

perceived benefits from our intervention, whereas the second question assesses students' perceived limitations of our intervention.

### Quantitative Analysis

Statistical analysis was performed in R (version 4.3.2) to analyze changes in mean modified ATP score per item (dependent variable) over time (independent variable) as measured in the pre- and postintervention questionnaires. We used the Student's unpaired *t* test as we are comparing the means of a continuous variable between two distinct time points with no pairing of the data between time points. Given that students' responses were anonymized with no identifiers, pre- and postintervention data were not paired; hence, a paired *t* test could not be performed. Statistical significance was set at  $p = .05$ .

### Qualitative Analysis

An open coding approach was taken to analyze students' responses to our feedback questions, with a focus on placing recurring patterns into thematic categories. The coauthors independently reviewed these comments, where responses were blinded. By exploring recurring ideas and patterns, we arrived at a conclusive list of major themes by consensus.

## Results

### Changes in Modified ATP Scores

Throughout the 2018-2019 academic year, a total of 130 of 170 (76.5%) third-year medical students at the University of Ottawa completed the preintervention questionnaire. One hundred and nine of these 130 students completed the postintervention questionnaire. There were three pairs of clear duplicate entries during analysis of the postintervention questionnaire. Those entries had the exact same qualitative feedback as well as the same responses to all Likert-type scale questions. Thus, one of each duplicate entry was removed prior to statistical analysis, bringing the final number of postintervention questionnaire entries to 106 (81.5% of those who completed the preintervention questionnaire). Student responses were completely anonymized in both surveys.

Overall, there was a statistically significant improvement in our students' modified ATP scores (as scored on a Likert-type scale between one and five as described earlier) on most statements following

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**Table 1** Medical Students' Modified ATP Scores Pre- and Postintervention

Statement ( <i>italic</i> = assesses subjective attitude)	Reverse Scored Item	Mean ATP Score Preintervention (SD)	Mean ATP Score Postintervention (SD)	Student's <i>t</i> Test	<i>p</i> Value
Crime is on the rise in Canada	✓	2.93 (0.83)	3.23 (0.96)	2.541	0.012 <sup>a</sup>
<i>The prison system functions as it should toward inmates</i>	✓	3.71 (0.88)	3.99 (0.71)	2.666	0.008 <sup>b</sup>
<i>Canada punishes crimes too severely</i>	—	2.74 (0.71)	2.98 (0.76)	2.536	0.012 <sup>a</sup>
People in jail or prison have adequate access to mental and physical health care	✓	3.89 (0.97)	4.16 (0.92)	2.169	0.031 <sup>a</sup>
<i>I know about the mental and physical health needs of incarcerated individuals</i>	—	2.32 (0.97)	3.62 (0.70)	11.61	< 0.001 <sup>c</sup>
<i>I would feel comfortable treating someone in jail or recently released from jail</i>	—	2.81 (1.08)	3.56 (0.84)	5.844	< 0.001 <sup>c</sup>
<i>Canada punishes crimes too mildly</i>	✓	3.24 (0.70)	3.51 (0.59)	3.166	0.002 <sup>b</sup>
Incarcerated individuals are more likely to have had several ACEs than the general population	—	4.48 (0.63)	4.84 (0.39)	5.191	< 0.001 <sup>c</sup>
<i>The primary purpose of the criminal justice system is to punish people who break the law</i>	✓	3.03 (1.00)	2.93 (1.05)	−0.721	0.472
People leaving custody have adequate access to physical and mental health care	✓	3.96 (0.70)	4.13 (0.78)	1.769	0.078
<i>The primary purpose of the criminal justice system is to rehabilitate people who break the law</i>	—	3.23 (1.10)	3.19 (1.18)	−0.283	0.778
People leaving custody have adequate access to housing, food, and financial support	✓	4.04 (0.70)	4.14 (0.71)	1.120	0.264
Incarcerated individuals are likely to have more communicable diseases (HIV, Hep C, tuberculosis, sexually transmitted infections) than the general population	—	4.15 (0.60)	4.24 (0.64)	1.010	0.313
Educational attainment (highest level of school completed) is lower in incarcerated individuals than in the general population	—	4.19 (0.64)	4.28 (0.67)	1.062	0.289
Incarcerated individuals are more likely to have been exposed to violence, substance use, and neglect as children	—	4.34 (0.64)	4.63 (0.50)	3.843	< 0.001 <sup>c</sup>
Incarcerated individuals are more likely to have active substance use problems than the general population	—	4.21 (0.59)	4.42 (0.59)	2.811	0.005 <sup>b</sup>
Incarcerated women are more likely to have had multiple unwanted pregnancies and therapeutic abortions than the general population	—	3.79 (0.75)	4.01 (0.70)	2.313	0.022 <sup>a</sup>
Incarcerated individuals have asthma, diabetes, cardiovascular disease, and other respiratory diseases at a higher rate than the general population	—	3.60 (0.78)	3.93 (0.73)	3.351	< 0.001 <sup>c</sup>
Incarcerated individuals are more likely to have been homeless before coming in to custody than the general population	—	3.98 (0.73)	4.22 (0.74)	2.491	0.013 <sup>a</sup>
First Nations, Metis, and Inuit persons are over-represented in correctional populations in Canada	—	4.15 (0.81)	4.40 (0.64)	2.568	0.011 <sup>a</sup>
Total Understanding Subscore (max 65)		51.71 (5.70)	54.63 (5.36)	4.059	< 0.001 <sup>c</sup>
Total Subjective Attitude Subscore (max 35)		21.08 (3.43)	23.78 (2.60)	6.706	< 0.001 <sup>c</sup>
Total Score (max 100)		72.78 (7.10)	78.42 (6.51)	6.290	< 0.001 <sup>c</sup>

ACEs = adverse childhood experiences; ATP = Attitudes Toward Prisoners Scale; Hep C = hepatitis C; HIV = human immunodeficiency virus; SD = standard deviation

<sup>a</sup>  $p < 0.05$

<sup>b</sup>  $p < 0.01$

<sup>c</sup>  $p < 0.001$

exposure to the correctional psychiatry intervention (Table 1). Our intervention improved students' understanding of the correctional system and led to their having more positive attitudes toward inmates as reflected by the total modified ATP score ( $t = 6.290$ ,  $p < .001$ ). Of note, questions with a checkmark under the "Reverse Scored Item" column are the ones where scoring was reversed, i.e.,

greater disagreement with the statement is indicative of more positive attitudes toward prisoners or a better understanding of the correctional system.

### Themes Observed in Qualitative Feedback

In addition, analysis of qualitative comments from students' postintervention questionnaire revealed several

**Table 2** Recurrent Themes within “Perceived Benefit from Intervention”

Themes	Subthemes
Better understanding of the correctional system and the incarcerated population	Barriers to care and limited resources within the system Unique needs of inmates, including mental health Prevalence of ACEs and traumatic experiences within the prison system
Increased humanization of incarcerated individuals	Increased comfort and interest in treating inmates Greater sense of compassion and empathy toward inmates

ACEs = adverse childhood experiences

**Table 3** Recurrent Themes within “Perceived Gaps in Intervention”

Themes	Subthemes
Improved access to background information prior to session	Providing patient background to read up on cases before session More readings and resources on topic to be sent out before session
Increased interactivity and participation of students	Allowing students to lead or aid in conducting the patient interview More or longer sessions Opportunity to attend an in-person interview at the correctional facility

themes regarding their perceptions of our intervention and their understanding of correctional psychiatry, which were mostly positive (Tables 2 and 3).

*Perceived Benefit from Intervention*

Students generally reported an overall perceived benefit from having attended the correctional psychiatry clinic, with only 11 out of the 106 medical students (10.4%) who completed the postintervention questionnaire denying that this intervention will affect their practice or clinical interest in any manner. Out of the 11 students, five stated that, although they had not learned anything of benefit, they nonetheless thought that the experience was otherwise valuable. Themes and subthemes identified during analysis of the students’ perceived benefits are summarized in Table 2.

Students reported that our intervention helped them gain a better understanding of the multiple factors influencing the care of inmates, particularly as it related to correctional psychiatry. Students noted that our intervention helped them gain better understanding of what the current correctional system is designed to do as well as where significant challenges lie. An important common subtheme was that our intervention made students more comfortable in treating current or former inmates in their future clinical practice. As one student noted,

This experience led me to better understand the legal and corrections system in Canada, as well as the lack of resources in prison with regards to mental health. It will make me more comfortable treating patients who have been in contact with the legal system in the future.

In addition, a large number of students stated that they gained insight into the frequency of ACEs in patients in the correctional system. Students also noted how little access to health care inmates have within the prison system. Comments included:

Much greater understanding of the ACE and how it relates to future incarceration. Expanded my understanding of the often lack of healthcare support in prisons.

Yes, this experience has made me more aware of the impact of ACEs. No matter what specialty I go in, ACEs are something I will take into account.

Students also noted frequently that they felt compassion toward the interviewed patients or noted the importance of health care workers treating this vulnerable population with more empathy:

It showed me that treating the incarcerated population doesn’t have to seem so different than the general population, and these interactions can be just as fulfilling as other clinical experiences.

I think these individuals deserve a lot more sympathy from society and their healthcare providers.

The following quote by one student aptly summarizes what students learned and how they benefited from the correctional psychiatry sessions:

The sessions provided insight into the impact of ACEs in adulthood. It is clear that there are many unmet healthcare and social needs of incarcerated individuals. . . provides perspective to look beyond the fact that an individuals (sic) has committed a crime, to understand their history, health concerns and socioeconomic barriers. It is clear that this population does not have adequate access to healthcare and many unmet needs. . . this session sparked an interest in working with the incarcerated population in Canada.

### *Perceived Gaps in Intervention*

Students overall were happy with how the intervention went and asked for the session to continue regularly for upcoming cohorts. Out of the 106 students who completed the postintervention questionnaire, 56 did not offer any feedback (52.8%). An additional seven students had feedback that was unrelated to our session, such as asking for a similar session within their other rotations, bringing the total to 63 students (59.4%) who did not provide direct feedback. Themes and subthemes identified during analysis of the remaining 43 medical students' feedback comments are summarized in Table 3 above.

Students reported that they might have found greater benefit in the session if they had access to more information prior to the intervention. Two subthemes fell under this statement, with some students asking for more readings and general background knowledge to be shared with them, and others specifically asked about being able to read ahead on the patient's background history before their interview. Examples included:

Incorporating some educational handouts highlighting important facts surrounding forensic psychiatry and the barriers to treatment/rehabilitation to the correctional population.

Exposure to this clinic was extremely valuable and interesting. Would be helpful to give students information prior to maybe read around the cases so they are able to ask more thoughtful questions. . .

Students also asked for the sessions to be made more interactive. Many students simply asked for more sessions to gain further exposure, but others directly asked to assist in conducting the patient interview. Others simply asked more broadly for the session to be more interactive. Sample responses included:

Make it more interactive if possible. It is not easy to keep focus when you have 4 hours of watching virtual interviews where you are not involved.

A chance to lead the interview of patients.

It was interesting and I wished it could have been longer. . .

Practice with forming a plan based on the interview conducted by [the psychiatrist].

Some students asked for the opportunity to observe correctional psychiatry in person at a correctional facility:

Having the lecture and then the clinical experience was very helpful. The opportunity to see corrections clinic in person would also be very interesting. . .

. . . it would be very interesting to have more opportunity to see patient interactions in correctional facility settings.

Most of the feedback was provided by students who greatly appreciated the intervention and had no specific advice on how it may be improved further. For example,

I think this was a novel and enlightening experience. I do not have any specific suggestions on how to improve it as I felt that this is probably one of the best ways to learn more about the healthcare system as it relates to those who are in prison/jail.

## Discussion

### *Modified ATP Scores*

Our results confirmed our hypothesis that our intervention would have a statistically significant impact in improving medical students' understanding of the correctional system and lead to their having more positive attitudes toward inmates, as measured by our modified ATP scale. This improvement was noted in 14 out of the 20 statements on our scale, as well as in the understanding subtotal score, subjective attitude subtotal score, and overall total score. As for the remaining six statements without a significant change in students' scores, there are a few things to note that may explain this.

There were two antithetical statements without a significant change following the intervention: "The primary purpose of the criminal justice system is to punish people who break the law" and "The primary purpose of the criminal justice system is to rehabilitate people who break the law." Because of the wording of these statements, it is inherently unclear whether greater agreement with the former statement indicates a greater sense of understanding and empathy toward inmates or whether the inverse is true. Someone who agrees with the first statement may believe our current system indeed is designed to punish rather than rehabilitate, whereas someone who agrees with the second statement may believe this ought to be the goal of the system. The difference in how students interpreted these two statements may have resulted in the absence of a statistically significant change in their scores.

The remaining four statements without a significant change in students' modified ATP scores were the following: people leaving custody have adequate access to physical and mental health care; people leaving custody have adequate access to housing, food, and financial support; incarcerated individuals are likely to

have more communicable diseases (human immunodeficiency virus (HIV), hepatitis C (Hep C), tuberculosis, and sexually-transmitted infections) than the general population; and educational attainment (highest level of school completed) is lower in incarcerated individuals than in the general population. The first two of these four statements address barriers to accessing care following release from jail. This was touched on briefly in the didactic lecture, but students did not observe its effect in the tele-correctional psychiatry clinic, as patients were all currently incarcerated. As for the last two statements, although this too was discussed during the didactic lecture, given the large variability of cases, these points may not have been directly observed by many of the students.

It is important to acknowledge that some of the statements we have labeled as being positive or negative may have been interpreted differently by medical students, such as in the examples given above. Statements such as “Incarcerated women are more likely to have had multiple unwanted pregnancies and/or therapeutic abortions than the general population,” although true, may be interpreted as a stereotyping of the population, prompting some students to disagree with the statement. This notion, as discussed above, may explain the differences in the degree of statistical significance between statements.

The results overall provide support that our intervention improves students’ understanding of the correctional system and leads them to have more positive attitudes toward the inmate population, particularly as they pertain to mental health. Our modified ATP scale is a novel scale that was designed to assess Canadian medical students’ perceptions of inmates. It was based on the original 36-item ATP scale that is often encountered in the literature.<sup>25,26</sup> Given that our modified scale is unique, it is impossible to directly compare our results with other published works that have utilized the original ATP scale. Kjelsberg *et al.*<sup>26</sup> assessed, among other groups, college students’ attitudes using the ATP scale, but there was no particular intervention in place to assess for a change in their ATP scores. Brooker *et al.*<sup>13</sup> also assessed medical students’ perspective of prisons and inmates but only collected qualitative data.

### Qualitative Feedback

Students appeared greatly appreciative of our session, and the majority of students did not have reservations or significant criticism.

Students commonly noted that our sessions helped them better understand how the current correctional system works and the limitations that lie therein. An important highlight is that many students noted that they were now more open to treating inmates in the future, and many more noted a sense of compassion and empathy toward the inmates. We did not alter patient interviews in any manner to seek an empathetic response, yet it is possible that simply seeing firsthand the conditions of our correctional facilities and hearing inmates’ stories helped students humanize them. It was likely in part because of students seeing how many of our patients had multiple ACEs and witnessing how their childhood traumas may have led to the choices they made and their eventual incarceration. This is, however, only a hypothetical explanation of the comments provided by students.

In terms of perceived gaps in our intervention, the majority of students did not have any feedback. Of those who did leave a comment, the most common feedback was simply a desire for a longer or additional similar sessions, reflecting students’ perceived benefits from the intervention. The two major themes of feedback consisted of a desire to obtain more information about the patients and their circumstances (both specific patient cases as well as more information regarding the correctional system) and a desire for more interactivity during the sessions. Although the students all received a lecture on the correctional system and ACEs prior to the session, it is possible that students simply wanted a more detailed lecture. In terms of students who asked to read about individual patients prior to the interviews, this remains a logistical difficulty within our clinic’s structure, as physicians often do not know exactly which patients they will be seeing until the day of the clinic. As for requesting more interactivity, this was certainly a point that we expected to be brought up. Given the sensitivity of the interviews and the relative inexperience of students, it would be difficult to expect students to aid with the patient interview. We do offer fourth-year medical student electives in correctional psychiatry, which is an avenue through which interested students can gain more firsthand experience. As for third-year medical students, if we are able to organize more sessions, there would definitely be opportunity to direct the interview toward the later sessions.

It is evident from qualitative analysis of students’ feedback that the majority gained some benefit from the intervention, developed a more positive attitude

toward inmates, and gained a greater understanding of the correctional system. Students generally asked for more sessions and greater interactivity for the future.

### Limitations

There were a number of limitations in our study. Although 130 students filled out the preintervention questionnaire, this meant 40 students from the cohort were missed for various reasons, such as illness, vacation, or other personal or professional reasons. In addition, only 106 completed the post-intervention questionnaire, meaning nearly 20 percent did not fill out the second questionnaire. This may have affected our results, especially if students more interested in the topic were more likely to fill out the second questionnaire. Further, given that the presurvey did not include any qualitative comments, it was impossible for us to note whether or not there were any true duplicate entries within that dataset. Additionally, as we did not use identifiers to be able to compare each individual student's pre- and postintervention ATP score, we were unable to perform paired *t* tests, leading to a higher risk of Type II errors (i.e., false negatives).

Although the senior author performed all patient interviews in front of students in a standardized, unaltered manner, it is possible that this author's personal attitude and engagement with students may have had an impact on the students' perceived benefits and responses on the questionnaire beyond the "exposure" aspect alone. Of course, this is a by-product of human bias and highly difficult to control for in a study such as ours.

There are a few points worth mentioning regarding our modified ATP scale. The original ATP scale on which our scale is based was published nearly 40 years ago and was designed for the United States<sup>25</sup> and, as such, may not be as valid today or as valid in Canada. It has nonetheless been used in recent years by multiple groups of authors across the world, and it has good psychometric properties.<sup>27,28</sup> We also could not assess the validity of our modified scale, as this was the first study utilizing it.

We only studied the perception of medical students from a single medical school in Canada, and it is unclear whether similar results would arise from applying the intervention at other medical schools in Canada or abroad. Additionally, there was no control group in our study, which limits our ability to link our intervention to the positive outcomes we noted

in a causative manner. The results should not be applied broadly to other undergraduate students either, let alone young adults in general, given our specific study subpopulation and our current study design.

Although we found a statistically significant improvement in students' attitudes toward prisoners using the modified ATP scale, this does not imply a clinically significant change in their behaviors or their eventual ability or desire to care for inmates. There is no way to predict this using our study's model, and it would require an extensive, longitudinal study to test this hypothesis.

Our students all experienced the intervention through one singular telemedicine clinic that primarily deals with one detention center. It is possible that inmates at other institutions, such as federal prisons or simply a different detention center, may have evoked a different response from students. Thus, our modified "Attitudes Toward Prisoners" scale more accurately reflected attitudes toward a specific subpopulation of prisoners.

### Conclusion

Individuals with multiple ACEs are more likely to become incarcerated, where a paucity of resources and further sources of trauma prevent adequate rehabilitation and reentry into society following release. Certainly, there is very limited access to mental health care within the prison system, despite a large number of inmates having mental health problems.<sup>29</sup> To our knowledge, our study is the first to implement and assess an intervention designed to improve medical students' knowledge of the correctional system and to lead them to have more positive attitudes toward inmates. Medical trainees generally have limited exposure to this population, and their understanding of the correctional system and attitudes toward inmates may be improved through simple interventions, such as observing a medical interview with an incarcerated person. These in turn may assist future physicians in humanizing incarcerated individuals and be more comfortable treating them. Future research should attempt to investigate how medical trainees and practitioners' attitudes toward inmates affect their treatment outcomes and assess whether a similar intervention can have a clinically significant impact on improving patient care within the correctional system.



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