Effects of participating in the annual Animal Welfare Assessment Contest on veterinary students’ self-perceived knowledge of and attitudes toward animal welfare science and their career choices

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OBJECTIVE
To evaluate the impact of participating in the annual Animal Welfare Assessment Contest (AWJAC) on veterinary students’ self-perceived knowledge of and attitudes toward animal welfare science and on participants’ career choices.

SAMPLE
46 veterinary students who participated in the AWJAC from 2014 through 2017.

PROCEDURES
The study consisted of 2 parts. In part 1, a survey regarding participation in the AWJAC was emailed to all 138 veterinary students who participated in the contest from 2014 through 2017. In part 2, a self-selected subset of 4 survey respondents were interviewed by telephone regarding their AWJAC experience.

RESULTS
Forty-six of 138 (33%) AWJAC participants responded to the online survey. When respondents were asked to rate the attitudes they held before and after participating in the AWJAC, significant increases were identified for engaging with animal welfare topics in their professional decision-making, making career choices based on their interest in animal welfare, and having their interest in animal welfare shape their professional career choices. Analysis of telephone interview transcripts revealed 3 major themes regarding AWJAC participation: defining animal welfare, the value of networking, and professional preparedness.

CONCLUSIONS AND CLINICAL RELEVANCE
Results suggested that participation in the AWJAC heightened veterinary students’ self-perceived awareness of animal welfare science, provided participants an opportunity to expand their professional networks, and prepared participants for entrance into the veterinary profession by enhancing communication and critical thinking skills. (J Am Vet Med Assoc 2020;256:239–244)

Despite the fact that animal welfare issues are of great importance to experts and the general public, many colleges of veterinary medicine in North America provide little formal training in animal welfare, animal behavior, or animal ethics. For example, in a 2015 survey, only 4 of 10 US colleges of veterinary medicine indicated that they offered a formal course in animal welfare, compared with 6 of 7 international institutions that indicated they did. In that same study, a review of curricula for the 30 US colleges of veterinary medicine found that only 6 provided a formal course with the term animal welfare or animal well-being in the title.

Previous research suggests that adding an animal welfare course to the veterinary curriculum can improve student attitudes toward animal welfare education but does not necessarily change students’ sense of responsibility regarding animal welfare advocacy. Clearly, additional information is needed on effective methods for incorporating animal welfare education into the professional training of veterinary students and for improving student attitudes and opinions toward animal welfare.

Extracurricular programs such as the AWJAC represent 1 method students may use to expand their understanding of animal welfare. The AWJAC was first held in 2002 with undergraduate students from 4 institutions in the Midwest and Canada and essentially represented a coupling of animal welfare science with a traditional livestock judging competition. Since that time, the contest has grown to include 3 divisions (undergraduate, graduate, and veterinary) with > 100 individuals from > 25 institutions participating annually.

The AWJAC consists of a single live assessment and 3 electronic assessments. For the live assessment, participants are given a timed tour of an animal facility at the hosting institution and provided information regarding various aspects of the animals’ care. Participants are then required to use their knowledge and

ABBREVIATIONS
AWJAC Animal Welfare Assessment Contest
experience to assess the welfare of the animals and explain their assessment to a panel of expert judges. For the electronic assessments, participants view 3 pairs of hypothetical scenarios that each present information about 2 animal facilities, including performance, health, physiologic, and behavioral data. Participants are required to determine which facility in each of the scenarios would provide a higher level of welfare and explain their determination to the judges. Contest participants may compete as individuals, as part of a team, or both. Species areas to be covered are announced at least 6 months prior to the competition.

The AWJAC incorporates both science and ethics into animal welfare assessment and requires preparation by participants to effectively complete their assessments of the scenarios and communicate their evaluations. Results of surveys performed at the end of each year’s contest indicate that >95% of participants believe the AWJAC is a valuable exercise, that they have increased their knowledge about animal welfare science by participating in the contest, and that they would recommend participating in the AWJAC to their peers. However, there has been no research to establish whether participating in the AWJAC causes long-term increases in students’ attitudes toward or expertise in animal welfare or whether participation influences students’ professional choices or achievements.

The objective of the study reported here was to evaluate the impact of AWJAC participation on veterinary students’ self-perceived knowledge of and attitudes toward animal welfare science and on participants’ career choices. We hypothesized that competing in the AWJAC would heighten participants’ self-perceived awareness of animal welfare science and increase their interest in pursuing careers involving animal welfare following graduation from veterinary college.

**Materials and Methods**

The study involved an online survey of past AWJAC participants and semistructured qualitative interviews of a subset of survey respondents.

**Online survey**

An online survey consisting of 18 questions was developed by the authors (Supplementary Appendix S1, available at avmajournals.avma.org/doi/suppl/10.2460/javma.256.2.239). Two questions asked whether the respondent’s veterinary college provided courses or training in animal welfare and what the primary focus of those courses or training was, and 1 question asked whether veterinary medicine was the respondent’s first professional career. Three questions specifically related to AWJAC participation (ie, number of times the participant had participated in the contest, what prompted the respondent to participate, and whether the respondent’s veterinary college provided a faculty advisor or coach). One question asked how strongly respondents agreed or disagreed with various statements about their interest in animal welfare after having participated in the AWJAC. 2 asked them to select the best response (rarely, sometimes, or often) to statements about their beliefs and practices before participating in the AWJAC and after participating, and I asked them whether they had received an achievement award when they participated in the AWJAC. Six questions elicited demographic information (ie, childhood environment [urban, suburban, or rural], preveterinary studies, year of veterinary college graduation, highest degree prior to veterinary college, gender, and year of birth). One question was open-ended and requested comments related to animal welfare or the AWJAC, and the final question asked whether respondents were interested in being interviewed about their experiences. Because of the direct relevance of the questions and the lack of a comparable test subject population, pretesting was not performed. The survey instrument was reviewed and approved by the University of Edinburgh Human Ethics Review Committee.

For the online survey, a list of email addresses for 136 individuals who had participated as veterinary students in the AWJAC from 2014 through 2017 was obtained from the AVMA. An initial recruitment email was sent to all individuals, and a maximum of 4 reminder emails were sent to nonrespondents over a 28-day period at approximately equal intervals on working days. Participants were provided information on the purpose of the research and the nature of their voluntary consent. In addition, participants were informed that they would be able to end their participation at any time prior to submission by closing the survey window. Incomplete surveys were excluded from analyses. Survey recruitment and distribution were facilitated through a not-for-profit corporation.

**Semistructured interviews**

Survey respondents who indicated they were interested in being interviewed about their experiences with the AWJAC were contacted by email and provided information on the purpose of the research and the nature of their voluntary consent. Those who agreed to be interviewed were asked to complete a consent form allowing the interview to be recorded and transcribed.

Interviews involved a semistructured format based on open-ended questions (Supplementary Appendix S2, available at avmajournals.avma.org/doi/suppl/10.2460/javma.256.2.239) and were conducted by telephone. Topics covered during each interview included the respondent’s animal welfare awareness, AWJAC participation, and career or training plans. A single individual (CLJ) conducted all telephone interviews and asked questions in the predetermined order. Interviews were recorded and transcribed by the same individual for later analysis with standard software.

**Data analysis**

Descriptive statistics were calculated for the online surveys. The Wilcoxon signed rank test was used to compare participants’ answers to the 2 questions that asked them to provide their best response (rarely,
sometimes, or often) to statements about their beliefs and practices before and after participating in the AWJAC. Analyses were performed with standard software; values of \( P \leq 0.05 \) were considered significant.

The grounded theory procedure described by Corbin and Strauss was used to analyze transcripts of the telephone interviews. Discrete portions or sections of each transcript relevant to concepts that emerged were identified and assigned a code. Codes were not predetermined. This was followed by a second and a third cycle, as outlined by Miles et al, during which transcript segments assigned the same or similar codes were analyzed within and across interviews to explore similarities and differences. Segments with similar codes were grouped into themes, and transcripts were then scrutinized again to confirm accurate representation of concepts. The entire procedure was modeled on procedures described by Voigt et al. The coding process was completed by a single individual (CLJ).

**Results**

**Online survey**

Completed surveys were returned by 46 of the 138 (35%) individuals invited to participate. Respondents were from 2 veterinary colleges in Canada and 10 veterinary colleges in the United States. Age ranged from 24 to 39 years (mean ± SD, 28 ± 3.2 years). There were 43 females, 1 male, and 2 respondents who identified with a different gender or did not disclose their gender. Twenty-eight (61%) respondents reported spending most of their childhood in a suburban environment, 10 (22%) reported spending most of their childhood in an urban environment, and 8 (17%) reported spending most of their childhood in a rural environment.

In terms of educational background, 41 respondents (89%) had completed a bachelor’s degree prior to veterinary school, 4 (9%) had completed a master’s degree, and 1 (2%) had attended college but had not completed an undergraduate degree. For most respondents, their undergraduate studies involved the natural sciences (n = 26) or physical sciences (13). Respondents graduated or were projected to graduate from veterinary college between 2015 and 2021. Thirty-nine (85%) respondents reported that veterinary medicine would be their first career; 7 (15%) reported it would be a second career.

Eighteen (39%) respondents had taken part in the AWJAC more than once, with 13 having participated 2 times, 4 having participated 3 times, and 1 having participated 2 to 4 times. Thirty (28%) respondents had not won an individual or team achievement award, and 30 (65%) had received an individual award (n = 1), a team award (18), or both individual and team awards (11). The remaining 3 (7%) respondents did not recall whether they had received an achievement award.

Respondents had received various levels of support from their veterinary college. Twenty-two (48%) respondents reported that their veterinary college provided them with a coach who taught animal welfare, and 15 (33%) reported that their veterinary college provided a coach who did not teach animal welfare. Six (13%) respondents reported that their veterinary college did not provide a coach, but they had identified a mentor outside of the college, and 3 (7%) responded that they did not have a coach or mentor.

Seventeen (37%) respondents reported that their veterinary college provided a stand-alone course on animal welfare. Twenty-five (54%) respondents indicated that their veterinary college provided instruction in animal welfare as a section of other required courses. Eighteen (39%) respondents reported the school provided an elective course on animal welfare. Twenty-four (52%) respondents reported that their veterinary college provided extracurricular activities (eg, workshops, lunch-and-learn sessions, or a student club) related to animal welfare. Two (4%) respondents answered that animal welfare was not included in their veterinary curriculum.

Animal welfare topics covered in the curriculum included general animal welfare principles (n = 44), livestock welfare issues (35), companion animal welfare issues (34), and equine welfare issues (25). Other topics covered in some courses were laboratory animal welfare, fish welfare, ownership of exotic animals, zoo animal and wildlife welfare, and welfare concerns regarding hunting and harvesting of wild animals.

Reasons most commonly cited for competing in the AWJAC included interest in animal welfare (n = 44), development of animal welfare assessment skills (38), participation in a fun event (34), development of communication skills (24), expansion of one’s professional network (19), resume building (17), peer request (11), and the possibility of an award (3). Another reason listed was class volunteerism.

Most respondents stated that since participating in the AWJAC, they strongly agreed or agreed with the statements that “I have increased my interest in animal welfare” (n = 43 [93%]), “I think more critically about animal welfare topics” (43 [93%]), “my confidence has increased in animal welfare practices” (43 [93%]), and “I encourage others to pursue interest in animal welfare practices” (42 [91%]). Lower numbers of respondents strongly agreed or agreed with statements that “I expanded my professional network in animal welfare specialization” (31 [67%]) and “I have shifted my career to an animal welfare specialization” (19 [41%]).

When responses for the question on beliefs or practices before participating in the AWJAC were compared with responses for the question on beliefs or practices after participating in the AWJAC, significant differences were identified for responses to 3 statements: “I engage with animal welfare topics in my professional decision-making” (\( P < 0.002 \)), “I make career choices based on my interest in animal welfare” (\( P < 0.001 \)), and “my interest in animal welfare shapes my professional career choices” (\( P < 0.01 \)). Significant differences were not identified for
responses to the statements “I believe animal welfare topics were adequately addressed in my educational curriculum” and “I believe animal welfare topics were adequately addressed in my educational curriculum in a way that addresses the public demand for veterinarians to be knowledgeable in this subject.”

Thirty-two respondents selected the same response (rarely, sometimes, or often) to the statement “I engage with animal welfare topics in my professional decision-making” to represent their beliefs after participating in the AWJAC as they did to represent their beliefs before participating in the AWJAC. Three primary themes emerged from grounded theory analysis of the transcripts: defining animal welfare, value of networking, and professional preparedness.

Defining animal welfare—All 4 interviewees defined animal welfare in a similar way, speaking about the need to treat animals with respect regardless of use and ensuring animals’ quality of life. They also all described moments during the AWJAC when they came to the realization that animal welfare is complex, multifaceted, and interdisciplinary, in contrast to their previous, more black-and-white attitudes toward the topic. As 1 respondent stated, “seeing these people who were experts in their field not really agree with one another I think is actually quite helpful. Because students have to take tests and answer questions that are kind of black and white, we tend to train ourselves to think that way, but the reality isn’t like that.”

Value of networking—Interviewees noted substantial gain from the networking provided through the AWJAC, with all interviewees stating that they identified career or training opportunities such as externships, clerkships, clinical rotations, and conference invitations as a result of their participation. Three of the 4 interviewees noted that networking provided through the AWJAC led them to identify mentors who gave them career guidance and additional information on animal welfare. One respondent stated, “being able to talk to people who are pursuing animals as a career has definitely helped me see what my career would look like if I decided to pursue animal welfare primarily as a career path.”

Professional preparedness—Interviewees reported increased species-specific welfare knowledge and knowledge of animal welfare assessment methods as a result of their participation in the AWJAC. They also perceived improved deductive reasoning skills, including the ability to synthesize data obtained by reviewing the literature and the ability to employ evidence from their research to critically evaluate animal welfare situations. They also believed that they had acquired communication skills, such as concise and professional delivery of information, and gained confidence. Interviewees also noted they felt more comfortable discussing difficult or controversial topics with others. One participant stated, “my experience … made me realize that I am well prepared to go into a field where these large decisions are being made based on weighing lots of different stakeholders and coming to the conclusion that benefits a larger population.” All 4 interviewees also indicated that they took on some form of leadership role related to animal welfare after participating in the AWJAC.

Semistructured interviews

Seventeen individuals indicated they would be interested in being interviewed about their experience and were contacted via email. Eleven individuals did not respond, and 2 did not follow through with interviews after initial contact. Four individuals completed the interview process. Individuals completing the interview process ranged from 24 to 37 years old; all had participated in the AWJAC ≥2 times. Interviews ranged from approximately 34 minutes to approximately 77 minutes. Three primary themes emerged from grounded theory analysis of the transcripts: defining animal welfare, value of networking, and professional preparedness.

Results of the present study suggested that, even for those who had access to core courses on animal welfare, participation in the AWJAC heightened veterinary students’ self-perceived awareness of animal welfare science and increased their interest in pursuing careers involving animal welfare.

Individuals who participated in the present study were from diverse backgrounds, but they had similar education levels and were predominately female. The latter was in keeping with the reported shift in gender of veterinary medical students. The Association of American Veterinary Medical Colleges, for example, has reported that approximately 80% of students
enrolled in 2018 were female.\textsuperscript{14} Most survey respondents indicated that they strongly agreed or agreed that participating in the AWJAC increased their interest and confidence in animal welfare, caused them to think more critically about animal welfare, and made them more likely to encourage others to pursue an interest in animal welfare. Lower numbers agreed or strongly agreed that participation allowed them to expand their professional network or caused them to shift their career to an animal welfare specialization. Overall, our results were similar to exit survey data from Baumgardner,\textsuperscript{10} who reported that 99% of veterinary students (n = 331) agreed or strongly agreed that AWJAC participation increased their animal welfare knowledge and was a valuable experience.

We also found that survey respondents did not answer differently when asked to rate whether they thought animal welfare topics were adequately addressed in their curriculum overall or whether animal welfare topics were addressed in a way that addressed public demand before participating in the AWJAC versus after participating, suggesting that participating in the contest did not change their perceptions of the adequacy of the animal welfare training that was provided. However, significant differences were found for responses to questions asking about using animal welfare for decision-making, making career choices based on interest in animal welfare, and allowing interest in animal welfare to shape their professional career choices, suggesting that participating in the contest resulted in positive changes in individual beliefs and responses to animal welfare.

All 4 individuals who completed telephone interviews indicated that they had been interested in animal welfare issues prior to participating in the AWJAC, but they all also perceived an improved understanding of the complexity and interdisciplinary nature of animal welfare and animal welfare assessment as a result of their participation. They also noted multiple times that participating in the AWJAC provided valuable networking opportunities that provided information on potential future training or education opportunities, mentorship, and guidance.

Interviewees also reported that they perceived that participating in the AWJAC had resulted in improved communication and deductive reasoning skills. Specific topics that were mentioned were professional delivery of information, synthesis of information, and being comfortable with discussing difficult topics. These functions are all critical for success in the veterinary profession and could impact professional decision-making and, potentially, career longevity and wellness.

Although the number of individuals who completed telephone interviews was small, the agreement between interview results and results of the online survey suggested that the interview results may be representative of the wider population of AWJAC participants. In particular, both parts of the study suggested that participation in the contest was associated with perceived increases in animal welfare awareness and decision-making abilities and a perceived positive career impact.

The finding in the online survey that participating in the AWJAC increased respondents’ perceived engagement with animal welfare topics during professional decision-making seemed to correspond with interviewee comments that they perceived a shift from “black-and-white” thinking about animal welfare issues to a greater understanding of the complexity of these issues. Similarly, the fact that 67% (31/46) of survey respondents strongly agreed or agreed that participating in the AWJAC expanded their professional network seemed to correspond with interviewee comments that they perceived substantial gains through the networking provided by the contest.

On the other hand, participation in the AWJAC did not have a clear impact on career choices. For example, only 41% (19/46) of survey respondents strongly agreed or agreed that participating in the contest had resulted in a shift in career to animal welfare specialization, but significant differences were found for perceptions before versus after participating with regard to making career choices based on interest in animal welfare and having professional career choices shaped by interest in animal welfare. In conjunction with telephone interviewee comments, we suggest that these findings can be interpreted to mean that AWJAC participation affects career choices in specific ways that do not necessarily represent a true shift in career aspirations. For example, 1 interviewee noted one way that animal welfare concerns “shape the way I view other practitioners and even … how I view certain clinics based on their animal handling or based on what questions [they ask].”

All 4 telephone interviewees reported initially feeling overwhelmed when attending the AWJAC, suggesting that attendees may not know what to expect from the experience. However, they also indicated that, once the contest began, they became excited and enjoyed the event, stating that it was a fun educational experience. These findings seem to suggest that the program should improve informational resources and perhaps institute a mentoring aspect so that new participants are more relaxed at the beginning of the event.

Telephone interviewees in the present study consistently identified the need for animal welfare to have a place in the veterinary curriculum, even though 44 of 46 (96%) survey respondents indicated that animal welfare issues were covered in their school’s curriculum in some fashion. In addition, although 44 of 46 (96%) survey respondents reported that animal welfare topics covered in the curriculum included general principles such as the Five Freedoms,\textsuperscript{15} all 4 telephone interviewees expressed a desire for a welfare course that covered the fundamental aspects of animal welfare such as the history, theory, and terminology. Three of 4 telephone interviewees also indicated that they wanted animal welfare topics to be better integrated into existing courses, with one stating, “I think that a lot of educational professionals
think of animal welfare as a one-off topic and I would like to see … more of … a systems approach to it [that would] be much easier to integrate [into the] curriculum. These conflicting results regarding current accessibility to versus incorporation of animal welfare topics were intriguing; however, the study did not permit drawing conclusions in this area. Studies that explore student perceptions of animal welfare education should be pursued further.

Major limitations of the present study were the small sample size and low survey response rate. The survey was distributed to all veterinary students who had participating in the AWJAC from 2014 to 2017 in an effort to maximize sample size. The fact that only 33% (46/138) of these individuals completed the survey raises concerns about possible self-selection bias. Still, we believe the response rate was high enough that our findings can be generalized to all participants.

It was also not ideal that the telephone interviewees in the present study represented a subsample of the survey respondents and were self-selected. A better method would have been to purposefully select the most experienced and articulate of the survey respondents to undergo telephone interviews. However, this could have resulted in a loss of participant anonymity. Finally, because of the low number of telephone interviewees, theme saturation could not be confirmed.

Veterinary students may be subject to a general tendency to underestimate the complexity of animal welfare assessment and may exhibit overconfidence in their judgment. Our findings suggested that veterinary students seemed to develop a more sophisticated understanding of animal welfare as a result of participating in the AWJAC and that this improved understanding drove further interest in the topic of animal welfare and a greater understanding of the complexity of animal welfare issues. Participants also were able to expand their professional networks, allowing them to gain further knowledge and seek out guidance. Additionally, participants perceived improved critical thinking and communications skills as a result of participating in the AWJAC. Taken together, our findings suggested that the AWJAC may represent a valuable tool for teaching veterinary students about animal welfare and animal welfare assessment.

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Footnotes

References