

Perspectives in Professional Education

Changes in teaching of nontechnical skills, knowledge, aptitudes, and attitudes at US colleges and schools of veterinary medicine between 1999 and 2009

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Objective—To identify changes in the teaching of nontechnical skills, knowledge, aptitudes, and attitudes (SKAs) at US colleges and schools of veterinary medicine between 1999 and 2009.

Design—Cross-sectional survey.

Sample—All 28 US colleges and schools of veterinary medicine.

Procedures—An electronic questionnaire was sent to the entire study population. Results were compared with published results of a similar survey performed in 1999 of colleges and schools of veterinary medicine in the United States and Canada.

Results—A 100% response rate was achieved. All respondents were found to offer at least 1 course related to SKAs in 2009, compared with 94% (29/31) of respondents in 1999. A total of 110 such courses were documented, compared with 47 in 1999. In 2009, 26 of the 28 (93%) colleges and schools had at least 1 course related to SKAs that was required, compared with 17 of the 31 (55%) respondents to the 1999 survey. Courses were most commonly incorporated in years 1 and 3 of the curriculum and were most often valued at 1 or 2 credit hours. Forty-one of 67 (61%) courses had been developed since 1999. The most common topics were communication and financial management.

Conclusions and Clinical Relevance—Results demonstrated an increased commitment to teaching the SKAs on the part of the US colleges and schools of veterinary medicine. However, the question remains as to how effective these initiatives will be in enhancing the economic success of graduates and the veterinary medical profession in general. (*J Am Vet Med Assoc* 2011;239:762–766)

The 1999 publication of “The current and future market for veterinarians and veterinary medical services in the United States”¹ (ie, the KPMG study) launched a broad-based national discussion about the then-current and future state of the veterinary medical profession. One of the key areas of concern was the contention that veterinarians may have lacked some of the SKAs necessary for economic success, particularly in the areas of business management and communications.

Subsequent studies^{2,3} further emphasized the need for greater expertise in SKAs as a prelude to success in the veterinary profession. To obtain a broader understanding of the incorporation of these SKAs in veterinary medical education, a study⁴ was completed in 1999 to determine the extent to which they were being taught in colleges and schools of veterinary medicine in the United States and Canada. At that time, these SKAs were generally referred to as veterinary practice management.

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ABBREVIATIONS

NCVEI	National Commission on Veterinary Economic Issues
SKAs	Nontechnical skills, knowledge, aptitudes, and attitudes

Charged with the task of following up on the findings of the KPMG study, the NCVEI was formed in 2001. Among the many challenges faced by the NCVEI was addressing the identified need for enhanced training in SKAs in the veterinary medical profession.^{5,6} In that regard, a number of projects were undertaken. Core competencies for success in veterinary medicine were defined,^{7–9} veterinary medical college and school applicant pool studies^{10,11} were conducted, future leadership needs for the veterinary medical profession were identified,^{12–14} and veterinary medical curricular enhancements were explored.^{15–22}

Given the extensive activity stemming from the KPMG study and the NCVEI projects, the question remains as to whether there has been an impact on the teaching of SKAs in the veterinary colleges and schools.

The purpose of the study reported here was to determine whether any substantive changes have occurred in the teaching of SKAs at US colleges and schools of veterinary medicine between 1999 and 2009.

Materials and Methods

The study was designed as a cross-sectional survey. In spring 2009, an electronic questionnaire seeking information on training opportunities in SKAs was sent to the associate deans for academic affairs at the 28 colleges and schools of veterinary medicine in the United States. Questionnaire recipients were instructed to complete the questionnaire themselves or to have the moderators of appropriate courses supply information regarding specific course content (for purposes of the present report, the term “course” is used to include all courses and clinical clerkships that provided any information on SKAs). Each academic dean determined which courses to include in the survey response. Each college or school of veterinary medicine was considered a single respondent. Nonrespondents were contacted by e-mail and telephone.

To facilitate comparison with results of a 1999 study⁴ on teaching of SKAs in colleges and schools of veterinary medicine in the United States and Canada, questions from the 1999 study were used as the foundation for the questionnaire used in the present study. However, to more fully gauge all available opportunities for current veterinary students to develop SKAs, the present survey was expanded to include both programs incorporated in the veterinary curriculum and noncredit instruction (ie, cocurricular programs) such as orientation programs, elective workshops, and lunchtime or after-school seminars. In addition, specific topic categories related to the SKAs were more narrowly defined than in the 1999 study to better gauge course content in an attempt to further characterize the emphasis of reported courses. For example, topics listed in the present survey included personal budgeting, personal time management, job-seeking skills, resumes and cover letters, and negotiating skills. In the 1999 survey, these topics were all included in a personal management category with no further delineation. The questionnaire consisted of 20 questions (a mixture of open-ended and closed-ended questions) on content and delivery of each required or elective course offered by the institution and 10 institution-level questions. Respondents were asked to submit a topic list and syllabus for each relevant course when they submitted the completed questionnaire.

Information on course content was obtained directly from the completed questionnaires and by reviewing the topic lists and syllabi for relevant courses that were submitted. In addition, the websites of participating institutions were reviewed to identify individual courses related to training in SKAs. When necessary, information obtained through these auxiliary methods was verified through e-mail or telephone contact with the appropriate institutional representatives.

Responses for the present survey were compared with responses previously reported for a 1999 survey⁴ of the 31 colleges and schools of veterinary medicine in the United States (n = 27) and Canada (4) at that time.

Results

Responses were obtained from all 28 US colleges and schools of veterinary medicine. All 28 (100%) respondents indicated that they offered at least 1 course related to SKAs in 2009, compared with 29 of the 31 (94%) respondents to the 1999 survey. Twenty-four of 28 (86%) respondents offered > 1 course in 2009, 20 (71%) offered ≥ 3 courses in 2009, and 8 (29%) offered ≥ 5 courses in 2009. By comparison, 11 of 31 (36%) respondents offered > 1 course in 1999 and 3 (10%) offered ≥ 3 courses in 1999. The 28 respondents provided information on 110 courses related to SKAs that were offered in 2009, compared with 47 courses offered by the 31 respondents to the 1999 survey.

In 2009, 26 of the 28 (93%) US colleges and schools of veterinary medicine had at least 1 course related to SKAs that was required (compared with 17/31 [55%] respondents to the 1999 survey) and 11 (39%) had ≥ 3 required courses. A total of 67 required courses were identified across the 28 colleges and schools of veterinary medicine that responded to the present survey, compared with 24 required courses across the 31 colleges and schools that responded to the 1999 survey.

In 2009, courses related to SKAs were most commonly offered during the first and third years of the curriculum (66/110 [60%] courses; **Table 1**). Most of the 67 required courses were also offered during the first (23/67 [33%]) and third (24/67 [36%]) years of the curriculum, but elective courses were most commonly offered during the third year (13/43 [30%]). In 2009, 19 of the 110 (17%) courses related to SKAs could be taken during any of the 4 years of the curriculum, compared with 2 of the 47 (4%) courses reported in response to the 1999 survey.

The credit value of most courses related to SKAs was 1 or 2 credit hours (**Table 2**), but there was an in-

Table 1—Placement of courses related to SKAs at colleges and schools of veterinary medicine in the United States in 2009 (n = 28) and at colleges and schools of veterinary medicine in the United States and Canada in 1999 (31).

Year in the curriculum	No. (%) of all courses		No. (%) of required courses	
	2009 (n = 110)	1999 (n = 47)	2009 (n = 67)	1999 (n = 24)
1	29 (26)	3 (6)	23 (33)	3 (13)
2	17 (16)	6 (13)	14 (21)	4 (17)
3	37 (34)	30 (64)	24 (36)	15 (63)
4	8 (7)	6 (13)	2 (3)	0 (0)
Any	19 (17)	2 (4)	4 (6)	2 (8)

crease in the number and percentage of 1-credit courses and a slight decrease in the percentage of 2-credit courses, compared with responses for the 1999 survey.

Most courses offered in 2009 used guest speakers (71/88 [87%] courses for which information was provided); by comparison, 45 of the 47 (96%) courses offered in 1999 for which information was provided used guest speakers. In 2009, guest speakers presented a mean of 63% of the course content. Of the 71 courses that reportedly used guest speakers in 2009, 43 (61%) used speakers who held academic degrees in business or a related discipline.

The number of years that individual courses related to SKAs had been offered was provided for 67 of the courses offered in 2009. Eighteen (27%) had been offered for ≤ 5 years, 23 (34%) had been offered for 6 to 10 years, 14 (21%) had been offered for 11 to 15 years, and 12 (18%) had been offered for > 15 years.

Topics most commonly covered in courses related to SKAs offered in 2009 were communication and financial management (Table 3), with communication comprising at least a portion of the course content for 53 of the 110 (48%) courses that were offered. There were 22 courses for which communication constituted $> 50\%$ of the course content, and 7 (32%) of these were required courses. Courses relating to financial management were offered by 24 of the 28 (86%) colleges

and schools of veterinary medicine in 2009. Seventeen of the 28 (61%) colleges and schools had a required course that provided information on financial management, and 13 (46%) had elective courses on the topic. Additional topics reportedly covered in courses related to SKAs offered in 2009 included career choices, diversity, grief counseling, animal welfare, professionalism, the human-animal bond, literature analysis, and licensing issues.

Personal budgeting, including debt management, was discussed in 32 of the 110 (29%) courses in 2009. Courses specific to personal budgeting were available to students at 22 of the 28 (79%) colleges and schools, and at 18 (64%) of the colleges and schools, courses specific to personal budgeting were required. Eight of the 28 (29%) colleges and schools offered personal budgeting courses during the first year of the curriculum (all required courses), 5 (18%) offered them during the second year (3 had required courses), 19 (68%) offered them during the third year (13 had required courses), and 2 (7%) offered them during the fourth year (both offered elective courses). Courses providing information on personal budgeting were available in > 1 year of the curriculum at 6 (21%) colleges and schools and were required in > 1 year at 4 (14%); required courses were offered during 2 years of the curriculum at 3 colleges and schools and were offered during years 1 to 3

Table 2—Credit hours assigned to courses related to SKAs at colleges and schools of veterinary medicine in the United States in 2009 (n = 28) and at colleges and schools of veterinary medicine in the United States and Canada in 1999 (31).

No. of credits	No. (%) of all courses		No. (%) of required courses	
	2009 (n = 110)	1999 (n = 47)	2009 (n = 67)	1999 (n = 24)
0	5 (5)	0 (0)	5 (8)	0 (0)
0.5	2 (2)	3 (6)	0 (0)	1 (4)
1	55 (50)	17 (36)	38 (58)	9 (38)
2	23 (21)	13 (28)	14 (21)	4 (17)
3	17 (14)	5 (11)	5 (8)	3 (13)
4	0 (0)	2 (4)	0 (0)	1 (4)
5	3 (3)	0 (0)	3 (5)	0 (0)
Other*	5 (3)	7 (15)	2 (3)	6 (25)

*Other consisted primarily of courses available for a variable number of credit hours.

Table 3—Specific topics covered in courses related to SKAs at colleges and schools of veterinary medicine in the United States in 2009 (n = 28).

Topic	No. (%) of courses			No. (%) of colleges and schools (n = 28)		
	All courses (n = 110)	Required courses (n = 67)	Elective courses (n = 43)	With any course	With required courses	With elective courses
Communication	53 (48)	33 (49)	20 (47)	23 (82)	17 (61)	13 (46)
Financial management	37 (31)	24 (36)	13 (30)	24 (86)	17 (61)	13 (46)
Law	31 (28)	25 (37)	6 (14)	21 (75)	18 (64)	6 (21)
Personal budgeting	32 (29)	24 (36)	8 (19)	22 (79)	18 (64)	15 (25)
Ethics	25 (23)	24 (36)	2 (5)	19 (68)	20 (71)	2 (7)
Marketing	24 (22)	15 (22)	9 (21)	19 (68)	14 (50)	9 (32)
Personnel management	23 (21)	14 (21)	9 (21)	16 (57)	13 (46)	9 (32)
Job-seeking skills	22 (20)	15 (22)	7 (16)	19 (68)	13 (46)	7 (25)
Negotiation skills	19 (17)	14 (21)	5 (12)	18 (64)	11 (39)	5 (18)
Leadership	19 (17)	10 (15)	9 (21)	13 (46)	10 (29)	9 (32)
Resumes and cover letters	20 (18)	16 (24)	4 (9)	17 (61)	13 (46)	4 (14)
Contracts	17 (15)	12 (18)	5 (12)	15 (54)	11 (39)	5 (18)
Team building	12 (11)	8 (12)	4 (9)	9 (32)	7 (25)	4 (14)
Personal time management	21 (19)	15 (22)	6 (14)	16 (57)	12 (43)	6 (21)
Strategic management	10 (9)	4 (6)	6 (14)	8 (29)	4 (14)	6 (21)

at 1). In addition, 14 (50%) colleges and schools offered student debt counseling or education in their orientation programs.

Cocurricular opportunities to develop SKAs were reported at 23 of the 28 (82%) colleges and schools. Five (18%) colleges and schools reportedly offered a certificate program in business skills. Several schools also reported recent changes in teaching methods in some SKA courses, even though content had not been changed.

Discussion

The 1999 KPMG study¹ suggested that the future economic vitality of the veterinary profession would hinge on the degree to which veterinarians were able to acquire proficiency in business management and other nontechnical skills. Since the release of that study, extensive amounts of time, energy, and money have gone into identifying and defining the SKAs that should be taught to veterinary medical students, and the present study was undertaken to identify the adjustments that have been made to veterinary medical curricula and cocurricular programs across the colleges and schools of veterinary medicine in the United States since 1999. In essence, these results demonstrate the extent to which the colleges and schools have been responsive to the changing needs of the veterinary medical profession.

Results of the present study suggested that the colleges and schools of veterinary medicine in the United States clearly recognized a need for more training opportunities in SKAs, as evidenced by the substantial increase in the number of such courses available to veterinary medical students between 1999 and 2009. An increase was evident in both required and elective courses. In addition, 23 schools specifically mentioned cocurricular activities, such as seminars, clubs, orientation programs, and other activities, that emphasized development of SKAs. Five schools offered students an opportunity to earn a certificate in business skills, and several schools stated that even if their course material had not changed, their information delivery method was more participatory in hopes of enhancing the learning process.

Although not a new idea, there was an increase in the number of courses related to SKAs that had variable credit values and were available during various years of the curriculum. On investigation, it was determined that these courses were actually offered in a continuous format throughout the entire curriculum.

Results of the present study indicated that between 1999 and 2009, for courses related to SKAs, the proportion of course content presented by guest speakers decreased. Guest speakers who were used in 2009 included speakers whose primary purpose was to introduce students to the wide variety of career options that exists in veterinary medicine. For other course content, it appeared that colleges and schools were increasingly relying on knowledge and expertise of the course moderators for content presentation. As course moderators, it is likely that these individuals are members of the veterinary medical college or school faculty.

An increased emphasis on communication skills was evident in the results of the present study. Communication was the topic most consistently mentioned as being incorporated into traditional core courses and clinical clerkships. The most frequently mentioned approach for the teaching of communication was built on the Bayer Animal Health Communication modules²³ and was provided by faculty who had been trained in their use.

Although results of the present study indicated that the number of opportunities for veterinary medical students to improve their SKAs had increased since 1999, a wide variety of course topics and emphasis was identified. There was little consistency among the various veterinary medical colleges and schools regarding whether these courses were required or elective, where these courses were placed in the curriculum, the number of credits allocated to these courses, or what grading system was used. This suggests that increased dialogue among the colleges and schools of veterinary medicine in search of consensus on these issues would benefit students. Given the number of comments received relating to recent course changes, it was apparent that a substantial number of questions remain as to appropriate topic emphasis for courses related to SKAs and the most effective teaching methods.

The veterinary medical profession continues to raise concerns about the amount of student debt incurred by its graduates in the professional program.^{24–26} It has been suggested that 1 way to increase students' ability to manage their debt would involve early intervention through debt counseling during orientation programs. Alternatively, debt management can be included as a specific topic in courses throughout the curriculum. The present study demonstrated that such training opportunities were more common in 2009 than in 1999 among colleges and schools of veterinary medicine in the United States.

Although the present study clearly demonstrated an increased commitment to teaching the SKAs on the part of the US colleges and schools of veterinary medicine, the question remains as to how effective these initiatives will be in enhancing the economic success of graduates and the veterinary medical profession in general. Ultimately, outcomes assessment will be needed to establish the efficacy of these programs in strengthening the profession's economic base.

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