

The Relationship Between Attitude Towards the Anatomy Course and Course Success in Health Vocational College Students

Zehra Seznur KASAR*¹ 

¹Aydın Adnan Menderes University, Nazilli Vocational School of Health Services, Department of Therapy and Rehabilitation, 09900, Aydın

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Abstract

The aim of this study was to examine the relationship between health vocational college students' attitudes toward the anatomy course and their course success. In this study, a 24-item Likert-type anatomy course attitude scale and a 10-item personal information form were administered face-to-face to 566 students. The personal information form was also administered to collect information on the students' demographic characteristics, their specific approaches to the anatomy course, and their perceptions of the course. The distribution of anatomy course attitude scale scores indicated that the majority of students (66.9%, n=379) exhibited a moderate attitude level, while 21.6% (n=122) exhibited a high attitude level and 11.5% (n=65) exhibited a low attitude level. The mean score on the anatomy course attitude scale was 75.35±16.08. A statistically significant relationship was observed between anatomy course attitude levels and anatomy course grades ($p<0.001$). The analysis demonstrated that students with high attitude levels were more successful in the course; the majority scored in the 61–80 range (50.8%), and they had the highest proportion of excellent grades (81–100, 18.0%). Conversely, students with low attitude levels exhibited the lowest proportion of excellent grades (1.5%). The findings demonstrate a statistically significant positive relationship between attitude levels and course success, suggesting that affective factors may play an important role in academic performance in the anatomy course.

Keywords: Anatomy, Basic medicine, Course success, Student attitude, Vocational school students

1. Introduction

Anatomy holds a crucial place in the education of students in health-related faculties and colleges, as it forms the foundation of medical disciplines and is recognized as the oldest branch of medical science (Akcaalan et al., 2025). Anatomy is a fundamental discipline that provides a comprehensive understanding of the normal structure of the human body, including the location of organs and the relationships among anatomical structures (Sahin Ozturkcan et al., 2024). Consequently, all healthcare professionals involved in maintaining health and treating disease require a sound knowledge of human anatomy.

The primary goal of anatomy education is to equip students with the ability to acquire essential anatomical knowledge efficiently and apply it effectively in clinical settings. Learning is a dynamic and interactive process; therefore, ongoing changes in contemporary educational paradigms necessitate the continuous evaluation of the structure and effectiveness of anatomy education. In this context, students' perspectives are increasingly incorporated into educational research and play an important role in informing instructional practices. Collecting students' opinions through robust data collection methods is essential for defining educational objectives, refining curricula, and evaluating the overall quality of anatomy education. Furthermore, student feedback plays a crucial role in implementing educational improvements and assessing the extent to which intended learning outcomes are achieved through written and oral assessments (Lee et al., 2025).

Although many studies have focused on medical faculty students, there is a relative scarcity of research addressing the attitudes of vocational college students, who form a critical part of the healthcare workforce

*Zehra Seznur KASAR; zehra.kasar@adu.edu.tr

(Zhang et al., 2023; Al Sharei et al., 2025; Barbian et al., 2025). By identifying these attitudes, this study aims to fill a significant gap in the literature regarding the motivational and affective factors that influence learning in health vocational education. Furthermore, the findings are expected to provide empirical evidence to help educators refine curricula and develop more targeted pedagogical strategies. In this regard, the aim of this study is to determine, using a validated the anatomy course attitude scale, the extent to which health vocational college students perceive the knowledge acquired in anatomy courses as valuable and essential for their future clinical practice.

2. Material and Methods

2.1. Study Design

This study was designed to assess the attitudes of students at Aydin Adnan Menderes University Nazilli Health Services Vocational College toward the anatomy course during the 2024-2025 academic year and to examine the relationship between these attitudes and their course success. Ethical approval for the study was obtained from the Non-Interventional Clinical Research Ethics Committee of the Faculty of Health Sciences at Aydin Adnan Menderes University (Approval Date: January 30, 2024; Approval Number: 2024/02). The study was conducted in accordance with the principles of the Declaration of Helsinki. Permission was also obtained to use the anatomy course attitude scale. The study population consisted of 750 students taking the anatomy course at Aydin Adnan Menderes University, Nazilli Vocational School of Health Services. The study aimed to include the entire study population; therefore, no sampling method was applied. To confirm that the number of participants provided adequate statistical power, the minimum required sample size was calculated as 198 (220 with a 10% reserve) using G*Power analysis ($\alpha=0.05$, power=0.95, effect size=0.50). The study was completed with 566 voluntary students (416 females and 150 males) aged 18-25 years, representing 75.4% of the total study population. Data were collected through face-to-face interviews using the personal information form and the anatomy course attitude scale. These instruments include questions about students' demographic characteristics and their opinions regarding the anatomy course. Written and verbal informed consent was obtained from all participants prior to data collection.

2.2. Personal Information Form

The personal information form includes questions related to students' demographic characteristics (e.g., age, gender, the program in which they were enrolled in, and the type of high school from which they graduated), and various aspects of their approach to the anatomy course. These included their reasons for choosing the department, preferred study methods for anatomy, the frequency and duration of study sessions, the perceived adequacy of weekly course hours, opinions on adding laboratory sessions, and their perception of the course's difficulty level.

2.3. Anatomy Course Attitude Scale

This scale was developed by Bahceci to evaluate students' attitudes toward the anatomy course (Bahceci, 2006). Permission to use the scale was obtained. It is a 5-point Likert-type scale consisting of 24 items (Table 2). The scale consisted of four sub-dimensions: commitment to the anatomy course, negative attitudes and behaviors exhibited during the course, prejudices about the course, and negative beliefs about the course. In this scale, positive items (M1, M2, M3, M5, M6, M7, M8, M9, M10, M15, M17, M23, and M24) were scored as Never (1), Rarely (2), Sometimes (3), Frequently (4), and Always (5), whereas negative items (M4, M11–M14, M16, M18–M22) were reverse-coded as Always (1), Frequently (2), Sometimes (3), Rarely (4), and Never (5). The scale yields a minimum score of 24 and a maximum score of 120. Scores between 24–55 indicate a low attitude level, 56–88 a moderate attitude level, and 89–120 a high attitude level toward the anatomy course. In the original study by Bahceci (2006), the Cronbach's alpha coefficients for the overall scale and its subscales — commitment to the anatomy course, negative attitudes and behaviors, prejudices about the course, and negative beliefs — were reported as 0.75, 0.68, 0.77, 0.81, and 0.79, respectively.

2.4. Statistical Analysis

Participants' demographic characteristics and opinion data were summarized as frequency (n) and percentage (%). The normality of data distribution was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests.

For continuous variables, One-Way ANOVA (with post-hoc comparisons) or Kruskal–Wallis H tests were used for group comparisons, as appropriate. Relationships between categorical variables were examined using the Chi-square test, and the linear-by-linear association test was used to evaluate ordinal trends. Statistical significance was accepted at $p < 0.05$.

3. Results

Descriptive statistics for the participants' demographic characteristics and course perceptions are presented as frequencies (n) and percentages (%) in Table 1. The sample consisted of 566 students (73.5% female, 26.5% male), with a mean age of 20.93 ± 3.45 years (min: 18, max: 25). Responses to the individual items of the anatomy course attitude scale items are summarized in Table 2. To evaluate the internal consistency of the scale for the current sample, a reliability analysis was conducted. The Cronbach's alpha coefficient for the overall 24-item scale was 0.854, indicating a high level of reliability. A comprehensive analysis was conducted to compare students' mean anatomy course attitude scale scores across various demographic, behavioral, and perceptual factors, and the results are summarized in Table 3.

Table 1. Descriptive analysis of students' demographics and anatomy course perceptions

Variables	Category	n (%)
Gender	Female	416 (73.5)
	Male	150 (26.5)
High school type	Health vocational high school	160 (28.3)
	Other	406 (71.7)
	Home patient care	210 (37.1)
Associate degree program	Elderly care	201 (35.5)
	Physiotherapy	155 (27.4)
	Own will	149 (26.3)
Reason for program selection	To help people	94 (16.6)
	Easy to find a job	199 (35.2)
	Family request	27 (4.8)
	Sufficient score for the program	97 (17.1)
	Before the lesson	26 (4.6)
Study method	After the lesson	220 (38.9)
	Before and after the lesson	84 (14.8)
	Only before the exam	236 (41.7)
Study frequency	1-2 times a week	159 (28.1)
	1-2 times biweekly	153 (27.0)
	1-2 times a month	61 (10.8)
	Only before the exam	193 (34.1)
	30 minutes	96 (17.0)
Study duration	1 hour	167 (29.5)
	1-2 hours	144 (25.4)
	2-3 hours	159 (28.1)
Are lesson hours sufficient	Yes	260 (45.9)
	No	180 (31.8)
	I have no opinion	126 (22.3)
Should laboratory hours be added	Yes	476 (84.1)
	No	36 (6.4)
	I have no opinion	54 (9.5)
	Very easy	10 (1.8)
Difficulty level of the course	Easy	15 (2.7)
	Medium	110 (19.4)
	Difficult	257 (45.4)
	Very difficult	174 (30.7)

Data are presented as n (%). n: Number; %: Percentage.

Table 2. Response frequencies and percentages for the anatomy course attitude scale items

Items	Responses n (%)				
	Never	Rarely	Sometimes	Frequently	Always
M1: I would be upset if I missed even one hour of the anatomy lecture.	135 (23.9)	80 (14.1)	163 (28.8)	59 (10.4)	128 (22.6)
M2: I would take this course even if the anatomy course were elective.	202 (35.7)	94 (16.6)	98 (17.3)	55 (9.7)	116 (20.5)
M3: Anatomy topics are interesting to me.	74 (13.1)	64 (11.3)	146 (25.8)	111 (19.6)	171 (30.2)
M4: I would be glad if there were no attendance requirement for the anatomy course.	104 (18.4)	94 (16.6)	151 (26.7)	52 (9.2)	165 (29.2)
M5: I would like to teach anatomy in the future.	262 (46.3)	110 (19.4)	98 (17.3)	34 (6.0)	62 (11.0)
M6: The anatomy course is enjoyable.	114 (20.1)	88 (15.5)	176 (31.1)	101 (17.8)	87 (15.4)
M7: Despite all its difficulties, I am glad I took the anatomy course.	99 (17.5)	64 (11.3)	122 (21.6)	91 (16.1)	190 (33.6)
M8: I truly love anatomy.	111 (19.6)	80 (14.1)	168 (29.7)	101 (17.8)	106 (18.7)
M9: I feel comfortable during the anatomy course.	144 (25.4)	103 (18.2)	152 (26.9)	81 (14.3)	86 (15.2)
M10: I actively participate in the anatomy course.	107 (18.9)	113 (20.0)	124 (21.9)	97 (17.1)	125 (22.1)
M11: I feel sleepy during the anatomy course.	132 (23.3)	141 (24.9)	145 (25.6)	69 (12.2)	79 (14.0)
M12: I get bored while studying for the anatomy course.	116 (20.5)	107 (18.9)	195 (34.5)	63 (11.1)	85 (15.0)
M13: I feel disgusted by the materials used in the lecture.	367 (64.8)	63 (11.1)	66 (11.7)	28 (4.9)	42 (7.4)
M14: I am afraid of the skeletons used in the lecture.	421 (74.4)	39 (6.9)	42 (7.4)	21 (3.7)	42 (7.4)
M15: Being checked on what I know by the instructor motivates me.	73 (12.9)	66 (11.7)	152 (26.9)	93 (16.4)	181 (32.0)
M16: Repeating a topic in front of my classmates in the anatomy course makes me lose interest in that topic.	198 (35.0)	95 (16.8)	126 (22.3)	55 (9.7)	92 (16.3)
M17: I harbor positive feelings towards anatomy.	106 (18.7)	66 (11.7)	169 (29.9)	102 (18.0)	122 (21.6)
M18: The approach of the instructor teaching the anatomy course affects my success.	85 (15.0)	39 (6.9)	98 (17.3)	83 (14.7)	259 (45.8)
M19: What I heard from my upperclassmen friends about this course before taking anatomy affects my attitude.	132 (23.3)	81 (14.3)	141 (24.9)	90 (15.9)	119 (21.0)
M20: The teaching method used in the anatomy course affects my success.	84 (14.8)	64 (11.3)	105 (18.6)	89 (15.7)	222 (39.2)
M21: Hearing from my friends studying in other faculties or universities that the anatomy course is difficult causes me to lose interest in this course.	145 (25.6)	106 (18.7)	163 (28.8)	67 (11.8)	84 (14.8)
M22: I don't think I will ever use the information I learned in anatomy again in the future.	220 (38.9)	99 (17.5)	136 (24.0)	42 (7.4)	68 (12.0)
M23: I believe the number of anatomy class hours should be more.	134 (23.7)	90 (15.9)	150 (26.5)	79 (14.0)	112 (19.8)
M24: The fact that the information I learn in the anatomy course is related to current topics makes me more willing to study.	80 (14.1)	53 (9.4)	138 (24.4)	78 (13.8)	213 (37.6)

Data are presented as n (%). n: Number; %: Percentage.

Table 3. Comparison of mean attitude scores across independent variables

Independent variables	Statistical test	Test statistic	df	p-value
Gender	Mann-Whitney U	$Z = -1.506$	N/A	0.132
High school type	Mann-Whitney U	$Z = -0.275$	N/A	0.783
Associate degree program	Kruskal-Wallis H	$\chi^2 = 20.266$	2	<0.001**
Reason for program selection	One-Way ANOVA	$F = 3.150$	4	0.014*
Study method	One-Way ANOVA	$F = 12.439$	3	<0.001**
Study frequency	One-Way ANOVA	$F = 15.082$	3	<0.001**
Study duration	One-Way ANOVA	$F = 2.935$	3	0.033*
Are lesson hours sufficient	One-Way ANOVA	$F = 8.994$	2	<0.001**
Difficulty level of the course	One-Way ANOVA	$F = 46.987$	4	<0.001**
Should laboratory hours be added	One-Way ANOVA	$F = 14.600$	2	<0.001**

* $p < 0.05$ and ** $p < 0.001$ indicate statistically significant differences in mean attitude scores among the categories of each independent variable.

The distribution of anatomy course attitude scale scores indicated that 67% (n=379) of students exhibited a moderate attitude level, 21.6% (n=122) a high level, and 11.5% (n=65) a low level. The mean attitude scores did not differ significantly based on the students' gender (p=0.132) or high school type (p=0.783), respectively. The mean attitude score of students in the physiotherapy program was significantly higher than the mean score of students in both the home care (p=0.001) and elderly care (p<0.001) programs. Cross-tabulation further confirmed a statistically significant association between the associate degree programs and the anatomy course attitude levels (p<0.001; Table 4). Additionally, mean attitude scores varied significantly depending on the students' reasons for program selection (p=0.014; Table 3).

A significant association was also observed between reasons for choosing the program and categorical attitude levels (p=0.022; Table 4). Students who selected the program 'Own will' demonstrated the highest rate of high attitude level (29.5%, n=44) compared to all other groups. Conversely, the high-level attitude rates were substantially lower among students driven by extrinsic factors, such as 'easy to find a job' (15.6%, n=31) or 'family request' (11.1%, n=3).

A statistically significant difference was found in the mean attitude scale scores across students' study methods (p<0.001; Table 3). Moreover, study frequency had a highly significant effect on mean attitude scores (p<0.001). Specifically, students in the exam-focused study group scored significantly lower than those who maintained more regular study patterns, such as '1-2 times a week' (p<0.001) or '1-2 times biweekly' (p<0.001) sessions. Although study duration significantly affected mean attitude scores (p=0.033; Table 3), it was not associated with categorical attitude levels (p=0.271; Table 4).

Table 4. Comparison of attitude levels based on independent variables

Independent Variables	Low attitude level 65 (11.5)	Moderate attitude level 379 (66.9)	High attitude level 122 (21.6)	χ^2 (df)	p-value
Gender					
Female (n=416)	46 (11.1)	279 (67.1)	91 (21.9)	0.326 (2)	0.850
Male (n=150)	19 (12.7)	100 (66.7)	31 (20.7)		
High school type					
Health vocational high school (n=160)	23 (14.3)	100 (62.1)	38 (23.6)	2.766 (2)	0.251
Other (n=406)	42 (10.4)	279 (68.9)	84 (20.7)		
Associate degree program					
Home Patient Care (n=210)	22 (10.5)	148 (70.5)	40 (19.0)	21.213 (4)	<0.001**
Elderly Care (n=201)	36 (17.9)	129 (64.2)	36 (17.9)		
Physiotherapy (n=155)	7 (4.5)	102 (65.8)	46 (29.7)		
Reason for program selection					
Own will (n=149)	9 (6.0)	96 (64.4)	44 (29.5)	17.849 (8)	0.022*
To help people (n=94)	13 (13.8)	56 (59.6)	25 (26.6)		
Easy to find a job (n=199)	26 (13.1)	142 (71.4)	31 (15.6)		
Family request (n=27)	5 (18.5)	19 (70.4)	3 (11.1)		
Sufficient score for the program (n=97)	12 (12.4)	66 (68.0)	19 (19.6)		
Study method					
Before the lesson (n=26)	2 (7.7)	19 (73.1)	5 (19.2)	3.024 (6)	<0.001**
After the lesson (n=220)	18 (8.2)	141 (64.1)	61 (27.7)		
Before and after the lesson (n=84)	9 (10.7)	44 (52.4)	31 (36.9)		

Independent Variables	Low attitude level 65 (11.5)	Moderate attitude level 379 (66.9)	High attitude level 122 (21.6)	χ^2 (df)	p-value
Only before the exam (n=236)	35 (14.9)	176 (74.5)	25 (10.6)		
Study frequency					
1-2 times a week (n=159)	10 (6.3)	97 (61.0)	52 (32.7)		
1-2 times biweekly (n=153)	13 (8.5)	103 (67.3)	37 (24.2)		
1-2 times a month (n=61)	6 (9.8)	47 (77.0)	8 (13.1)	33.838 (6)	<0.001**
Only before the exam (n=193)	36 (18.7)	132 (68.4)	25 (13.0)		
Study duration					
30 minutes (n=96)	17 (17.7)	64 (66.7)	15 (15.6)		
1 hour (n=167)	15 (9.0)	110 (65.9)	42 (25.1)	7.568 (6)	0.271
1-2 hours (n=144)	17 (11.8)	94 (65.3)	33 (22.9)		
2-3 hours (n=159)	16 (10.1)	111 (69.8)	32 (20.1)		
Are lesson hours sufficient					
Yes (n=260)	30 (11.5)	174 (66.9)	56 (21.5)		
No (n=180)	12 (6.7)	118 (65.6)	50 (27.8)	16.621 (4)	0.002*
I have no opinion (n=126)	23 (18.3)	87 (69.0)	16 (12.7)		
Should laboratory hours be added					
Yes (n=476)	43 (9.0)	320 (67.2)	113 (23.7)		
No (n=36)	7 (19.4)	24 (66.7)	5 (13.9)	24.051 (4)	<0.001**
I have no opinion (n=54)	15 (27.8)	35 (64.8)	4 (7.4)		
Difficulty level of the course					
Very easy (n=10)	2 (20.0)	6 (60.0)	2 (20.0)		
Easy (n=15)	0 (0.0)	5 (33.3)	10 (66.7)		
Medium (n=110)	1 (0.9)	61 (55.5)	48 (43.6)	142.234 (8)	<0.001**
Difficult (n=257)	11 (4.3)	192 (74.7)	54 (21.0)		
Very difficult (n=174)	51 (29.3)	115 (66.1)	8 (4.6)		

* $p < 0.05$ and ** $p < 0.001$ indicate statistically significant differences in anatomy attitude levels among the categories of the independent variable.

Crucially, a highly significant positive ordinal association was confirmed between anatomy attitude levels and course success ($p < 0.001$; Table 5), indicating that higher attitude levels directly correspond with superior academic performance. Students classified with a high attitude level demonstrated markedly superior success rates, with 18.0% achieving excellent grades (81-100) compared to a negligible 1.5% in the low attitude level group. In parallel, mean attitude scores increased significantly across higher course-grade categories ($p < 0.05$; Table 5), reinforcing that a positive affective disposition is associated with higher course achievement.

Table 5. Comparison of anatomy course grade categories according to anatomy course attitude levels

	Unsuccessful grade (0-40) 62 (11.0)	Moderate grade (41-60) 177 (31.3)	Good grade (61-80) 274 (48.4)	Excellent grade (81-100) 53 (9.4)	χ^2 (df)	p-value
Low attitude level 65 (11.5)	16 (24.6%)	21 (32.3%)	27 (41.5%)	1 (1.5%)		
Moderate attitude level 379 (66.9)	40 (10.6%)	124 (32.7%)	185 (48.8%)	30 (7.9%)	32.139 (6)	<0.001
High attitude level 122 (21.6)	6 (4.9%)	32 (26.2%)	62 (50.8%)	22 (18.0%)		
Anatomy course attitude scale score	68.26 $\pm$ 0.68	72.96 $\pm$ 0.67	76.08 $\pm$ 0.65	83.28 $\pm$ 0.67*		<0.05

Data are presented as n (%). n: Number; %: Percentage. Data are presented as mean $\pm$ standard error. The mean attitude score in the excellent grade category is significantly different from that of all other categories (* $p < 0.05$).

4. Discussion

Attitude is a concept that reflects students' approaches to studying, learning, and school or coursework (Onderoglu et al., 2017). Numerous studies have established that student attitudes exhibit a significant relationship with their academic achievement, participation rates, and overall grades (Bajaj & Devi, 2021; Hwang & Son, 2021; Melad, 2022). Anatomy courses are frequently perceived by students as the most challenging, laborious, and monotonous component of the curriculum, primarily because of the need to master a vast amount of anatomical terminology within a limited timeframe. Therefore, investigating students' attitudes toward anatomy courses is crucial, as these attitudes are likely to be related to course success, making this a significant area widely explored in the literature (Serin & Zambak, 2020; Yousuf et al., 2020; Buru, 2021; Can, 2022; Tekin Orha & Rende, 2024).

The analysis revealed that neither the high school type of graduation nor the gender variable contributed to statistically significant differences in the students' mean anatomy course attitude scale scores and attitude levels. The results regarding the gender variable align with studies in the relevant literature, as no significant difference was observed in attitude scale scores towards the anatomy course by gender (Temur et al., 2020; Dolu & Dilcen, 2022; Tekin Orha & Rende, 2024). This finding supports the notion that students' attitude toward the subject is independent of a demographic factor like gender. In contrast to our findings, Temur et al.

(2020) reported a statistically significant difference in the total attitude scale scores towards the anatomy course based on the type of high school the students had completed. This discrepancy may primarily be rooted in the sample imbalance, as demonstrated in Table 1. The disproportionately smaller size of the health vocational high school group limited the statistical power necessary to detect a genuine difference in attitude scores between the groups. In alignment with the existing literature, the mean attitude score toward the anatomy course differed significantly across associate degree programs, with physiotherapy students exhibiting the highest scores (Tekin Orha & Rende, 2024). This finding suggests that the higher undergraduate placement scores of physiotherapy students, which serve as an indicator of academic success, may explain the observed significant difference in their attitudes toward the anatomy course compared to those of students in other programs. Furthermore, this positive disposition is reinforced by the critical role of anatomical knowledge, which is directly and consistently applied in physiotherapy practice.

The analysis revealed a statistically significant relationship between students' reasons for program selection and their attitude level toward the anatomy course ($p=0.022$). These findings suggest that students' motivations for program selection are intrinsically linked to their subsequent attitudes toward the anatomy course. It is possible that this positive disposition reflects the perceived clinical relevance of anatomical knowledge for physiotherapy students, which serves as a foundational pillar in their future professional practice. Intrinsic motivation emerged as the strongest factor: Students who chose the program out of 'Own will' demonstrated the highest proportion of high attitude levels (29.5%). Conversely, those driven by extrinsic reasons, such as 'Easy to find a job' or 'Family request', largely clustered in the medium or low attitude score categories. This highlights the critical role of intrinsic motivation in developing a positive disposition toward challenging core subjects such as anatomy, as supported by the literature (Tekin Orha & Rende, 2024).

A highly significant relationship was observed between students' study methods and their attitude levels and mean attitude scores toward the anatomy course ($p<0.001$). The highest proportion of students with a high attitude level (36.9%) was recorded among those who studied both before and after the lesson. This suggests a positive association between regular study habits and positive attitudes toward the anatomy course, highlighting the benefits of continuous engagement with the course. In addition, students who studied regularly (weekly or biweekly) had significantly higher mean attitude scores than those who studied only before examinations.

The analysis revealed that students' attitude scores differed significantly according to their study duration ($p=0.033$), suggesting an association between longer study duration and more positive attitudes toward the anatomy course. However, this association was not reflected in the categorical distribution of attitude levels ($p=0.271$), indicating that longer study duration alone may not be sufficient to promote a higher attitude level. Specifically, students who exhibited the lowest attitude scores, particularly those selecting the 'I have no opinion' option, tended to report uncertainty regarding the class time. This finding may reflect insufficient student knowledge concerning the course content or its structural organization. Conversely, students with higher attitude scores appear to have established a more conclusive perception, clearly evaluating the class time with a 'Yes' or 'No' distinction.

There was a highly significant relationship between students' demand for added laboratory time and their attitude levels ($p<0.001$). Notably, 23.7% of students who requested additional laboratory time scored at the high attitude level; this figure constituted the highest rate observed across all response groups. This finding strongly corroborates other research, which demonstrates a direct link between high interest in practical, application-based learning and generally positive anatomy course attitudes (Yousuf et al., 2020; Bolatlı, 2021; Dolu & Dilcen, 2022). A highly significant relationship was found between student perceptions of the difficulty level of the course and their attitudes toward anatomy ($p<0.001$). Specifically, the majority of students who described the course as 'Difficult' (74.7%) and 'Very difficult' (66.1%) maintained a moderate attitude, indicating that high perceived difficulty did not necessarily lead to negative attitudes.

The data obtained indicate a statistically significant and positive correlation between students' attitudes toward the course and their course success. This finding is consistent with previous studies, which generally indicate that a positive attitude toward courses tends to align with higher learning success (Chetoui et al., 2024; Barbian et al., 2025; Jaison et al., 2025). As demonstrated in Table 5, this statistically significant and positive relationship between attitude levels and course success is a key finding of the study. When contrasted with the

low attitude group (1.5%), students with a high attitude level were more likely to achieve an excellent score (18.0%), highlighting attitude as an important variable associated with academic performance in anatomy.

The primary strength of this study is its focus on students at the vocational school of health services, a group that is relatively underrepresented in the anatomy education literature compared to medical faculty students. A major methodological advantage is the extensive and diverse sample size, which enhances the statistical power of the findings and the generalizability of the results to similar educational settings. Furthermore, the research stands out by utilizing the validated anatomy course attitude scale', which demonstrated high internal consistency in the present study (Cronbach's alpha: 0.854), as reported in the results section. This ensures that the quantitative data reflecting student perceptions is both reliable and consistent. The study also provides a multifaceted analysis by correlating academic success with specific study habits and the voluntary nature of students' program choice, thereby offering additional insight into the factors associated with student motivation.

Despite its strengths, this study has some limitations. First, the research was conducted at a single center, which may limit the generalizability of the results to all vocational health students across different regions. Second, the cross-sectional design reflects student attitudes at a specific point in time and does not account for long-term changes throughout their education. Finally, there is a possibility of response bias; since the data rely on student perceptions, participants may have provided answers they perceived as socially or academically expected rather than fully reflecting their personal experiences.

5. Conclusion and Recommendations

This study evaluated associate degree students' approaches to the anatomy course from a multifactorial perspective, combining a large sample size, consideration of demographic variables, and course success with the application of an attitude scale. The results obtained suggest that students' awareness of the importance of anatomical knowledge in their professional careers appears to be significantly related to both their attitudes toward the course and their course success. In conclusion, to sustain student success and increase interaction, more comprehensive studies that regularly examine students' attitudes and perceptions toward anatomy courses would be beneficial for better guiding instructors.

Authors' Contributions

Zehra Seznur KASAR; conceptualization, methodology, data collection, formal analysis, writing – review and editing.

All authors have read and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

Ethical Approval and Consent to Participate

This study was conducted in accordance with the principles of the Declaration of Helsinki and approved by the Non-Interventional Clinical Research Ethics Committee of Aydin Adnan Menderes University, Faculty of Health Sciences (Approval Date: January 30, 2024; Approval Number: 2024/02). Written informed consent was obtained from all participants.

Conflict of Interest

The author declares that there is no conflict of interest.

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