



Gross Anatomy Education in China during the Covid-19 Pandemic: A National Survey

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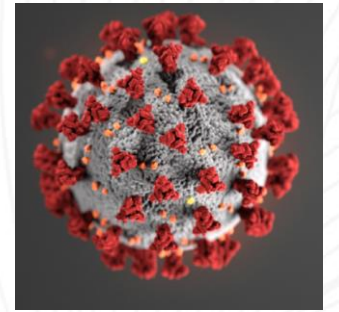
PART ONE



Background

1

Covid-19 caused everything different



In late December 2019, the existence of a cluster of patients with pneumonia from unknown causes in Wuhan, China, raised concern among local health officials.

On January 7, 2020, the causative pathogen was identified as a novel coronavirus named SARS-CoV-2; the disease caused by this virus is called Covid-19.

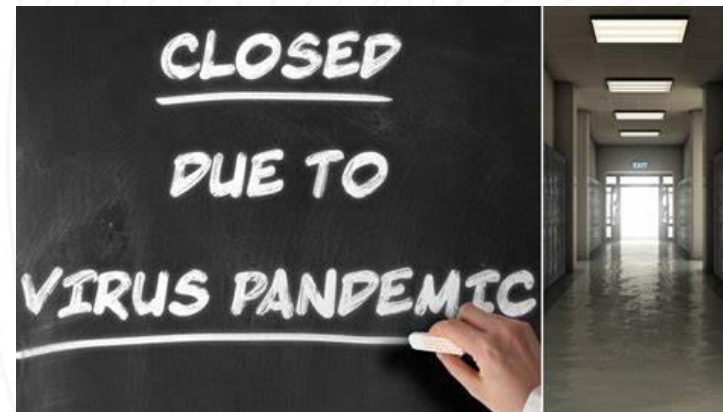
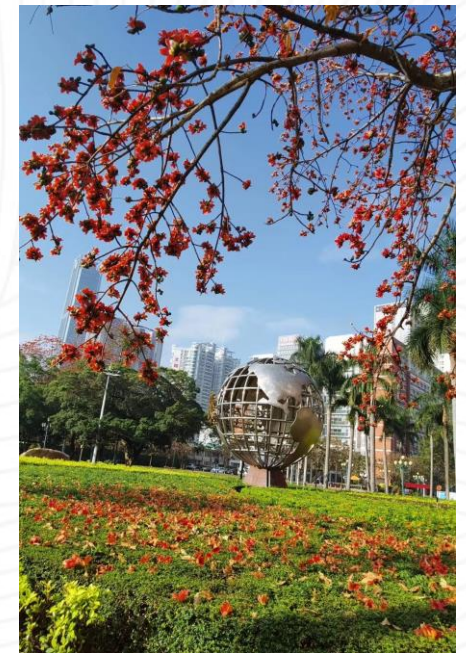
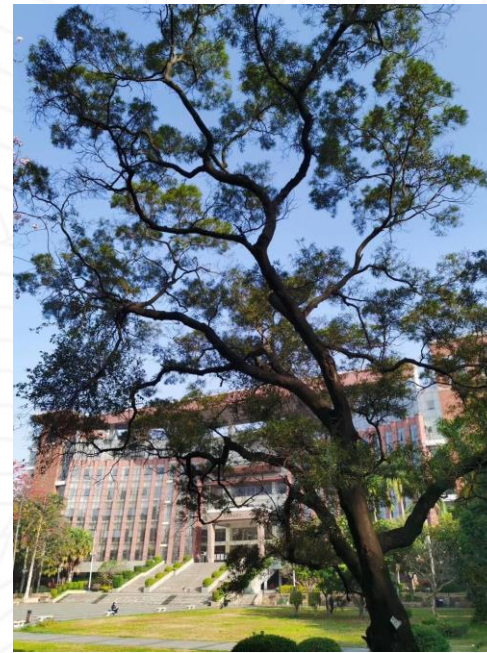
To control the spread of Covid-19, the Chinese government imposed a series of measures:

- the isolation of Covid-19-infected populations all over the country
- social distancing
- quarantine
- shut down transit in and out of Wuhan



2 Our beautiful campus ...

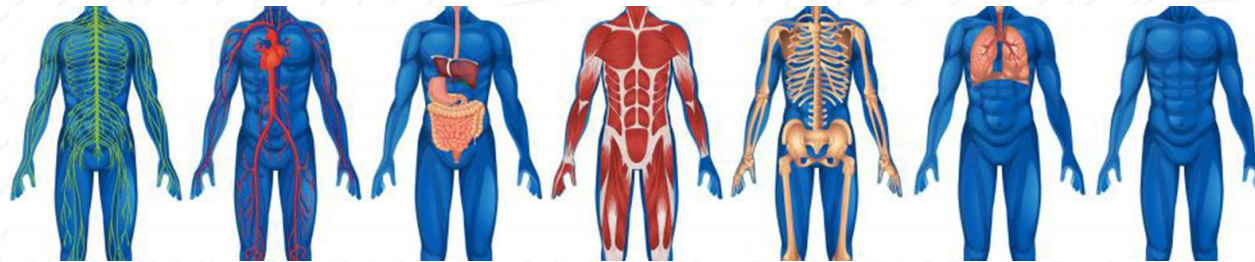
- Schools were closed
- At the beginning of last spring semester, all the medical schools in China moved their education to online learning from traditional face-to-face sessions



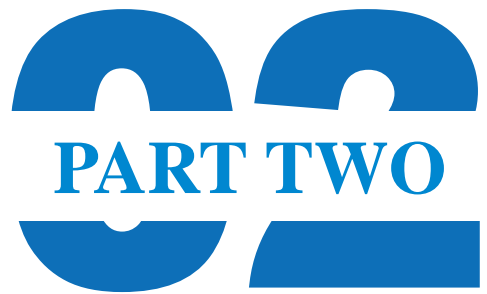
2 Anatomy education



- The oldest scientific discipline of medicine and is also one of the most important courses of the basic medical sciences
- Viewing pictures, using models, and dissecting human bodies are effective methods to acquire anatomical knowledge



- Whether Chinese anatomists have been able to facilitate the hasty online teaching during the pandemic is unclear
- A nationwide survey was conducted on gross anatomy teaching, in order to provide facts for reflection on online anatomy education, and for planning the future direction of anatomy education in China



Research methods

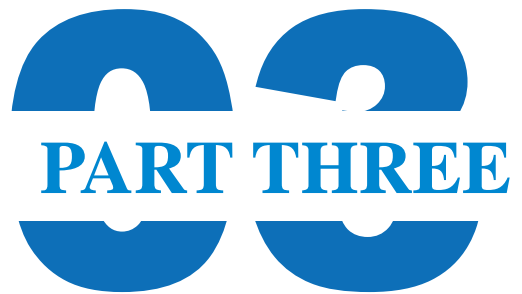
1

Survey implementation and data analysis

- An approach employing convenience sampling of the anatomy departments was used
- The survey was performed with the collaboration of the Chinese Society for Anatomy Sciences (CSAS)
- The questionnaire was implemented on an online survey platform, SoJump
- The survey was focused on anatomical **theoretical session, practical session, active learning & assessments, and teachers' perspectives**
- Kendall's Tau *b* test was used to assess the correlations among the items of the survey
- The qualitative text data from the open-ended question were analyzed using word frequency analysis combined with a conventional content analysis approach



Observation



PART THREE



Results

General analysis of the response



- A total of **359** answers were received
- **77** questionnaires (one questionnaire from each medical school) were included for a further analysis of online teaching during the pandemic
- All **359** answers were included for the analysis the teachers' perceptions
- The distribution of the responses covered all the provinces in mainland China, as well as Hong Kong and Macao
- Among the 77 medical schools, 38 are medical schools of comprehensive universities, and the remaining 39 are completely independent medical universities/schools
- 20 responding medical schools are from “double-first class” universities
- 26 surveyed medical schools are situated in first-tier and new first-tier cities



Introduction

1

Survey of various aspects of anatomical online teaching

Items	Theoretical sessions	Practical sessions
How had anatomical online course conducted before the pandemic:	n = 77	n = 77
Via the development and use of MOOC	14 (18%)	4 (5%)
Via flipped classes using MOOC or other online learning resources	18 (23%)	9 (12%)
Via blended teaching with a combination of online and face-to-face teaching	25 (33%)	13 (17%)
Do not have any such experience	20 (26%)	51 (66%)
Formats of the anatomical online teaching:	n = 77	n = 77
Synchronous live broadcasting	35 (45%)	13 (17%)
Asynchronous recorded broadcasting	13 (17%)	4 (5%)
Mixed synchronous and asynchronous	27 (35%)	16 (21%)
Suspended and will make up the missed lesson after the pandemic	0 (0%)	36 (47%)
Others	2 (3%)	8 (10%)
Change of the class hours:	n = 76	n = 52
Increased by over 25%	12 (16%)	0 (0%)
Increased by less than 25%	7 (9%)	0 (0%)
No change	56 (74%)	37 (71%)
Decreased by less than 25%	1 (1%)	8 (15%)
Decreased by over 25%	0 (0%)	7 (14%)
Time used for teacher-students interaction at synchronous live broadcasting:	n = 63	n = 31
More than half of the lecture time	4 (6%)	10 (32%)
Less than half of the lecture time	49 (78%)	21 (68%)
Almost no interaction between teacher and students	10 (16%)	0 (0%)

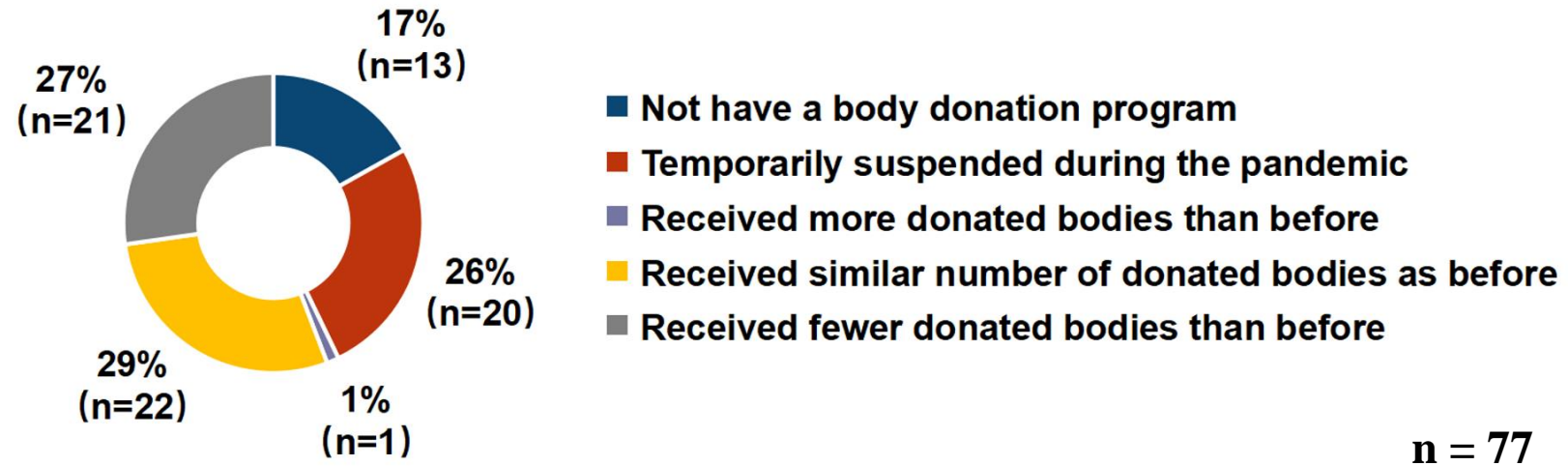
The correlation analysis among the various aspects of anatomy practical online teaching

Items	The format of the online practical sessions	The change of the practical class hours	The change of the teaching materials for practical sessions	The platforms/tools employed for practical sessions	The time for teacher-student interaction during practical sessions
The format of the online practical sessions	1.000				
The change of the practical class hours	-0.303**	1.000			
The change of the teaching materials for practical sessions	-0.465**	0.372**	1.000		
The platforms/tools employed for practical sessions	-0.432**	0.380**	0.798**	1.000	
The time for teacher-student interaction during practical sessions	-0.372**	0.228*	0.626**	0.601**	1.000

n = 77, * P < 0.05, ** P < 0.01

1

Survey of body donation at medical schools in China during the pandemic



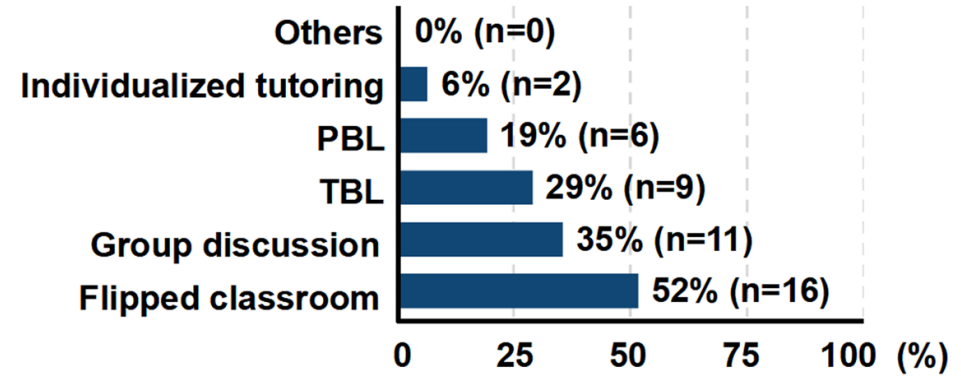
- The acceptance of body donations is not advisable because of the potential Covid-19 risks to medical students and health care workers
- Fewer bodies will be available for dissection or for producing the necessary specimens
- Real cadaver dissection will be replaced by virtual dissection



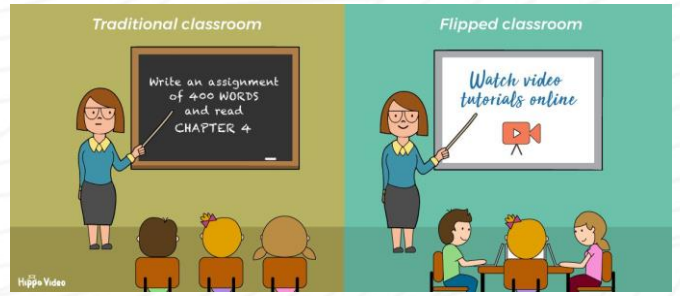
2

Survey of various aspects regarding active learning in gross anatomy

- 33 of the surveyed schools suspended active learning during the pandemic
- Only 13 schools had neither implemented active learning before nor during the pandemic
- Active learning has become common in anatomy education in China



n = 31

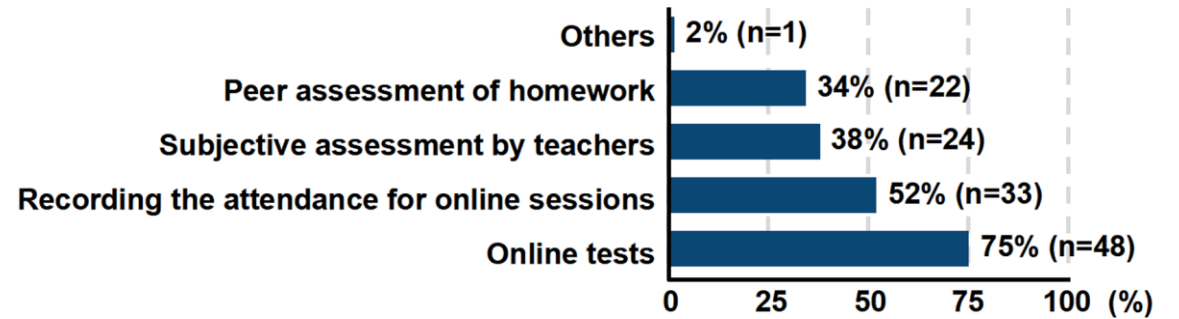


2

Survey of various aspects regarding the online assessment of gross anatomy



- 83% implemented online assessments
- Teachers could acquire some timely feedback on the competence of the students
- Summative assessment was commonly adopted

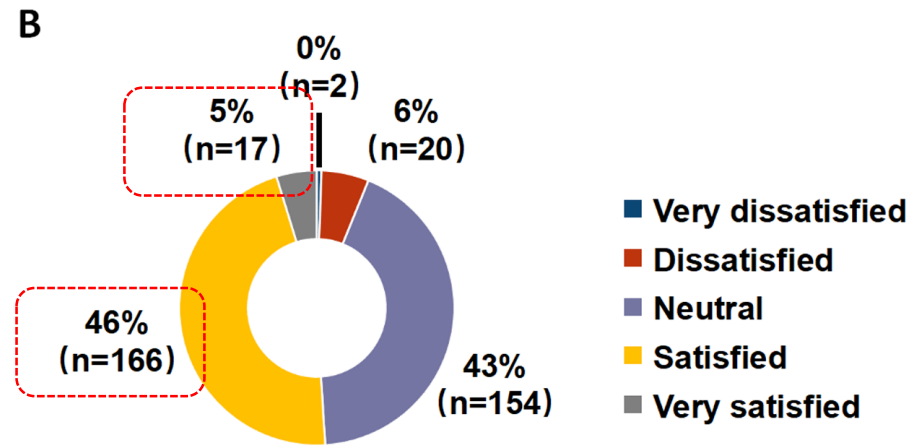
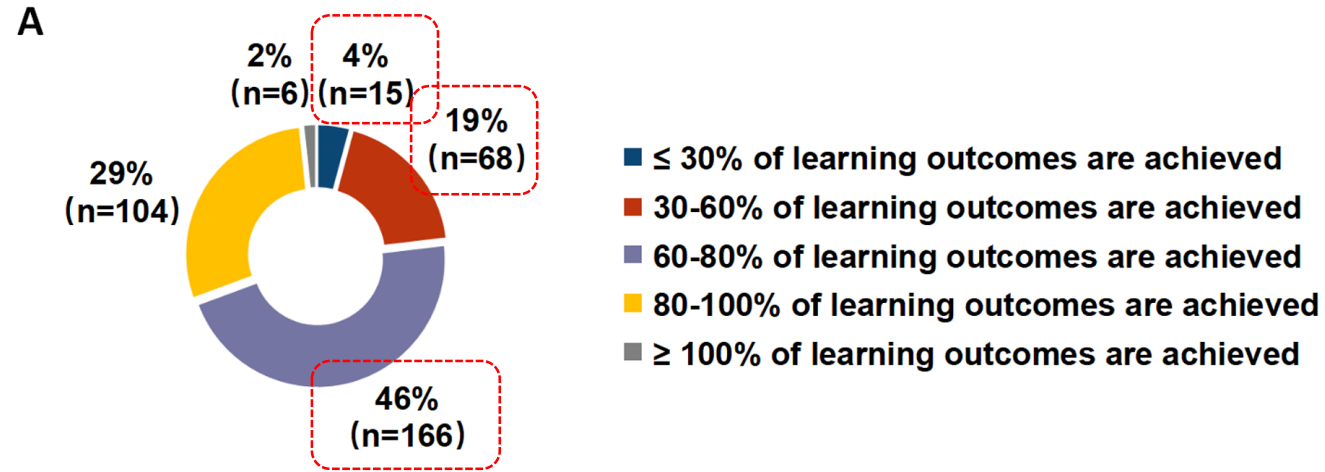


n = 64



3

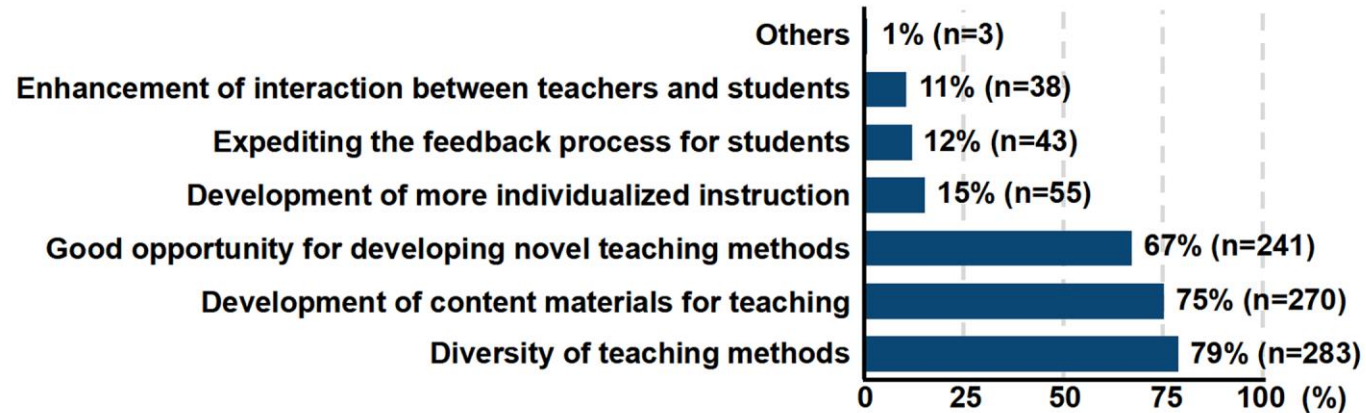
Survey of the evaluation of effectiveness of online gross anatomy education



n = 359



3 Survey of the gains of teaching gross anatomy online among medical teachers

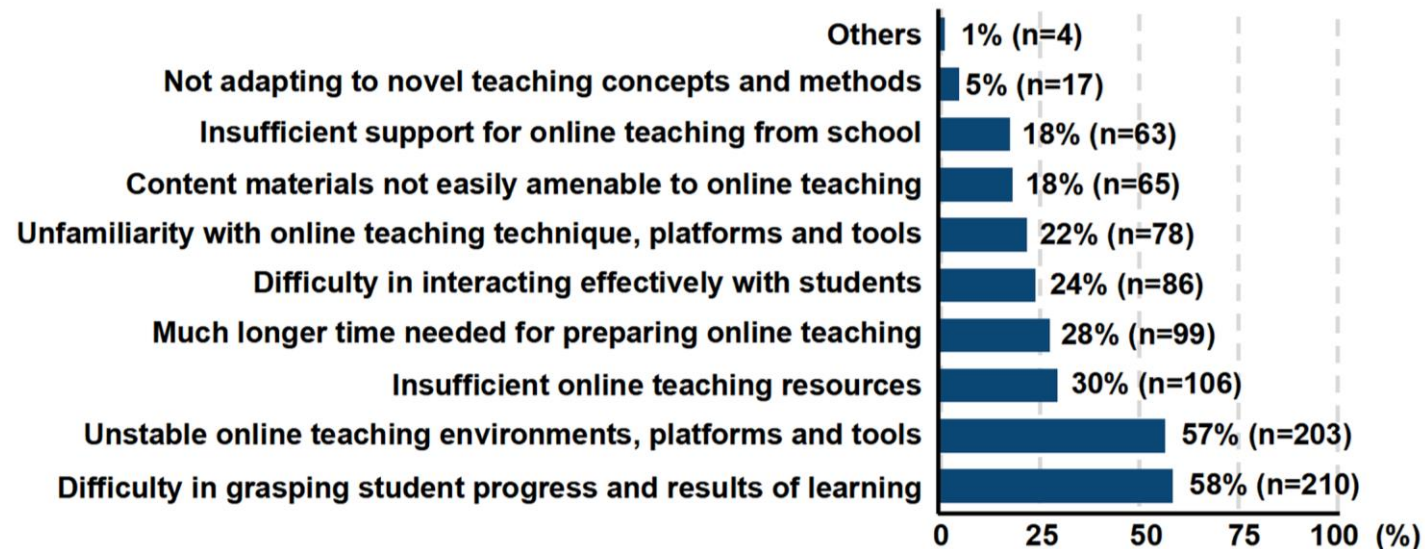


n = 359

- The pandemic may passively push medical schools to improve their online teaching environment, and the establishment of a contingency plan to use online education platforms for unexpected incidents is also one of the largest medical school gains

3 Survey of the difficulties of teaching gross anatomy online among medical teachers

- The interaction between the instructor and the students is a great challenge of online education
- Another concern from some anatomy teachers was how to conduct an effective and impartial examination for the summative assessment of the course



n = 359

3

Teachers' comment analysis and the representative quotes (n = 141)

Categories	Subcategories	Comments N (%)	Representative quotations	
Demands in learning technology		37(26%)	“Suggest CSAS integrate the premium VR resource and share with all the medical schools freely, to prevent the repetitive construction and assure the quality.”	
			“Hopefully, the prestigious medical schools could share their online teaching resource. ”	
Evaluations on online teaching	Acknowledgement of anatomical teaching online	35 (25%)	“ Collaboration is the most in-demand currently to optimize the anatomy education.”	
			“Online teaching will continue to grow definitely and become normalized after the pandemic.”	
	Emphasizing the indispensability of practical sessions	32(23%)	“Online education could be the beneficial supplement for face-to-face teaching, and facilitate the students to learn at different paces.”	
			“Online teaching has no problem in theoretical sessions, but please keep in mind that laboratory training is an indispensable part of anatomy education.”	
Suggestions for future online teaching		23 (16%)	“Online teaching is helpful for pre- and post- class, but face-to-face class is absolutely necessary. ”	
	Suggestions for anatomy teachers			“ No dissection, no anatomy. ”
				“ Regular homework and quizzes to check knowledge points.”
			“Suggest that we should open laboratory for the medical students who are studying anatomy when face-to-face class resume , even if they would have finished anatomy course at that time.”	
	Suggestions for the management in teaching affairs	14 (10%)	“More interaction with the students can improve the effect of online teaching.”	
			“Online teaching platform greatly facilitates the homework assignment and correction , as well as environment friendly, so it should be used more often.”	
			“ Syllabus for online teaching should be different from that of the traditional class, so that it is imminent to establish a standard for online teaching.”	
			“We should invest more in hardware and platform , develop more online teaching resource , provide teachers with more training , all these contribute to the effectiveness online learning.”	

4

Limitation

- As a cross-sectional study, any temporal changes during the pandemic in gross anatomy and teaching approaches were not investigated. Also it can not reflect the longitudinal changes on anatomy education
- The conclusions might not be completely applicable for medical schools in all regions since the uneven economic development in China has influenced the establishment of local higher education programs
- The “satisfaction” and “effectiveness of learning objectives” were not clearly defined in the questionnaire. Therefore the respondents might be confused when they answered the questions based on their own perspectives



4

Conclusion

- This survey was designed to examine the situation of stopgap anatomy education in China over the first several months of the Covid-19 pandemic
- The overall results reflected both strengths and weaknesses
- The survey found that significant portions of medical schools in China already had experience in online teaching and the needed infrastructure, thus enabling them to mount online teaching during the pandemic
- There were some schools that chose to suspend their practical sessions during the pandemic
- The several greatest difficulties identified by teachers in this survey may provide insight into the obstacles to the development of gross anatomy education in China





THANKS

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