

# The influence of the COVID-19 pandemic on social networks and academic performance of undergraduate medical students

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# Background



# Background



Social networks

First-/Second- year students

Domestic/International students

# Background

- Social networks
  - › Study-related support
  - › Collaboration
  - › Friendship
  - › Information sharing
  - › Learned from

# Background

- Before COVID-19 **VS** During COVID-19
- First-year students **VS** Second-year students
- Domestic students **VS** International students

## Research questions

- How did the COVID-19 pandemic restriction measures influence students' social networks?
- Are there different effects between international and domestic students?

## Research questions

- How did medical students' social network size link to their academic performance?
- How did the COVID-19 situation influence medical students' academic performance compare to the pre-covid situation?

## Research questions

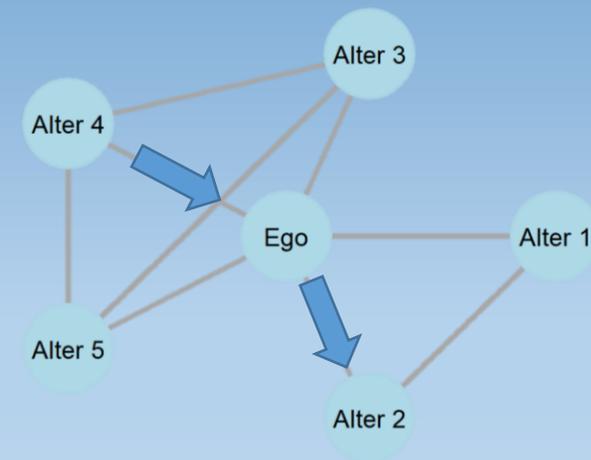
- Which difficulties did students encounter during the COVID-19 pandemic and what support do they need?

# Research methods

- Social Network Size?
  - › Ego social networks
  - › Indegree and outdegree centrality

Popularity

Activity



# Research methods

- Similarity?
  - › External-Internal (E-I) index

$$\text{E-I index} = \frac{EL - IL}{EL + IL}$$

where

*EL* = the number of external friendship links

*IL* = the number of internal friendship links

# Research methods

- Academic performance comparison?
  - › the Kruskal-Wallis H test
- Relationship between academic performance and social networks sizes?
  - › Spearman correlation analyses

# Research methods

- Difficulties students encountered and the support they need?
  - › Thematic analysis (qualitative)

# Research results:

## Average ego network size

		Study-related support		Collaboration		Friendship		Information sharing		Learned from	
		before	during	before	during	before	during	before	during	before	during
Y1	Total, mean (SD)	6.19 (4.35)	3.92 (2.60)	3.93 (2.83)	2.70 (2.20)	6.81 (5.56)	3.18 (3.09)	6.25 (5.18)	3.35 (3.67)	3.76 (4.30)	2.06 (2.17)
	Domestic, mean (SD)	6.51 (3.71)	4.10 (2.80)	3.86 (2.70)	2.65 (2.29)	5.54 (2.98)	2.90 (3.05)	5.37 (4.07)	3.21 (3.65)	2.80 (2.54)	2.15 (2.26)
	International, mean (SD)	5.71 (5.11)	3.24 (1.38)	4.04 (3.02)	2.86 (1.75)	8.67 (7.57)	4.24 (2.94)	7.54 (6.25)	3.90 (3.61)	5.17 (5.73)	1.71 (1.80)
Y2	Total, mean (SD)	5.91 (4.50)	3.92 (3.05)	4.49 (3.14)	2.35 (2.02)	6.51 (5.19)	3.45 (2.71)	5.28 (4.67)	3.37 (3.07)	3.70 (3.74)	1.88 (2.40)
	Domestic, mean (SD)	6.17 (4.74)	4.11 (3.25)	4.54 (3.22)	2.32 (1.83)	6.20 (5.12)	3.51 (2.87)	4.94 (4.67)	3.57 (3.23)	3.86 (3.99)	1.91 (2.57)
	International, mean (SD)	4.75 (2.99)	3.44 (2.36)	4.25 (2.73)	2.44 (2.43)	7.88 (5.25)	3.28 (2.23)	6.75 (4.44)	2.83 (2.50)	3.00 (2.23)	1.77 (1.87)

Y1 = first-year students, Y2 = second-year students

# Research results:

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Y1 = first-year students, Y2 = second-year students

## Research results:

Indegree and outdegree of first- and second-year students' social networks before and during the pandemic

		Study-related support		Collaboration		Friendship		Share information		Learn from	
Centrality		First-year	Second-year	First-year	Second-year	First-year	Second-year	First-year	Second-year	First-year	Second-year
Before-pandemic	Indegree	1.29%	0.42%	1.28%	0.26%	2.14%	0.41%	1.40%	1.43%	2.15%	1.27%
	Outdegree	7.68%	3.47%	4.90%	1.86%	10.68%	2.82%	10.64%	9.93%	14.36%	10.30%
During-pandemic	Indegree	0.31%	1.86%	0.19%	1.29%	0.26%	1.50%	1.38%	0.98%	0.23%	2.24%
	Outdegree	1.39%	6.34%	0.94%	5.09%	1.40%	5.76%	6.14%	7.29%	0.91%	9.39%

## Research results:

Average E-I index of nationality as an attribute to form social networks among first and second year domestic and international students during COVID-19

	Study-related support		Collaboration		Friendship		Information sharing		Learned from	
	D	I	D	I	D	I	D	I	D	I
Y1 (SD)	-0.745 (0.493)	-0.457 (0.578)	-0.588 (0.595)	-0.425 (0.513)	-0.625 (0.563)	-0.532 (0.563)	-0.621 (0.543)	-0.324 (0.565)	-0.435 (0.604)	-0.285 (0.620)
Y2 (SD)	-0.807 (0.395)	-0.552 (0.411)	-0.746 (0.533)	-0.421 (0.726)	-0.716 (0.446)	-0.505 (0.377)	-0.698 (0.455)	-0.421 (0.529)	-0.479 (0.540)	-0.340 (0.546)

D = domestic students, I = international students; Y1 = first-year students, Y2 = second-year students

# Research results:

## Influence of COVID-19 pandemic measures on academic performance

- Before COVID-19

- › First-year students

- Passing rate **83.77%**
- Mean score (SD) **6.33**(.65)

- › Second-year students

- Passing rate **85.19%**
- Mean score (SD) **6.51**(.65)

- During COVID-19

- › First-year students

- Passing rate **89.11 %**
- Mean score (SD) **6.53**(1.02)

- › Second-year students

- Passing rate **88.52%**
- Mean score (SD) **6.69**(.69)

## Research results:

### Spearman correlation of ego network size and students' academic performance

		1	2	3	4	5	6
1	Study-related support	1	.490**	.428**	.463**	.399**	.208**
2	Collaboration		1	.305**	.399**	.403**	.166*
3	Friendship			1	.559**	.398**	.249**
4	Information sharing				1	.428**	.276**
5	Learned from					1	.102
6	Academic performance						1

\*\*The Spearman correlation is significant at the 0.01 level (2-tailed). \*The Spearman correlation is significant at the 0.05 level (2-tailed).

## Research results: Difficulties & Support

- **Social connections & interactions**

- › Communication
- › Social support

It is just very **hard to maintain friendships** with people who I was only just getting close to before the lockdown. It is also quite hard to meet new people since you don't speak to people during lectures and you cannot just ask people if they want to grab a coffee together or things like that, which is how I would have made friends before

More understanding for internationals, also understanding that they want to be with their family or in their home town especially because they would otherwise often **be alone in their small rented room** without a lot of contact.



## Research results:

### Difficulties & Support

- **Learning & studying**
  - › Educational support

I **have much more motivation in the CML** [Central Medical Library] and UL. I miss support, and by that I mean ways in which the university continues to motivate its students





## Research results:

### Difficulties & Support

- **Physical & mental well-being**

- › Mental support

At first I **felt very lost**: 1) new country and completely different program 2) my first year as a university student 3) I had no idea what was expected of me and 4) I **had absolutely no one to compare myself to at the start**. For me this was very frustrating to have absolutely no idea about how I am comparing to the rest of the generation and what I found hard/easy and how studying is going.



## Discussion

- Smaller social networks
- More challenging time for first-year students & international students
- Higher academic performance
- Social, Educational, and Mental support

## Take-home message

- When institutions implement blended or online learning due to - for instance - pandemics or other situations of force majeure, ensure creating a conducive learning environment by considering **social**, **educational** and **mental support** to compensate for the shortcomings caused by shrinking social networks.

# For a better international learning environment

Please consider taking this **10-15 minute** survey which is part of a scientific study aimed at gaining a better understanding of your perceptions towards the **international learning environment**.

Scan it, and let us hear your voice:

Xiaoming Xu  
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Wenckenbach Institute

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# Reference

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# Q&A

Thanks for listening

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