

Student-designed survey on the education of Evidence-Based Medicine

Tomoki Hirata¹ Takuya Hanabayashi¹ Hiroyuki Oishi¹
Kazutaka Kajiura² Koushiro Tanamoto² Ohashi Wataru³
Yukiko Kuru³ Takahiko Yamamori³ Yoshitaka Fukuzawa³

1. Fourth year student, Aichi Medical University School of Medicine
2. Second year student, Aichi Medical University School of Medicine
3. School of Medicine, Aichi medical university



No potential COI to disclose

Outline of the Presentation

1. Background
2. Methods
3. Results & Discussion

Outline of the Presentation

1. Background

2. Methods

3. Results & Discussion

1. Background

Numerous mistakes
in the history of medicine



Phlebotomy, or
blood letting,
had long been a
popular medical
treatment.

Source:
Amsterdam Museum

1. Background

Numerous mistakes
in the history of medicine



In 1828,
Pierre-Charles
Alexandre Louis proved
that this was

Harmful 

**by using
Statistical Methods**

1. Background

Since the beginning of the 19th century, Evidence-based medicine (or EBM) has been regarded as important.



However, it was not until 2 years ago that the *Model Core Curriculum of Medical Education* in Japan included EBM.



1. Background



Finding EBM teaching programs in the majority of syllabi on university homepages, we received an impression that they varied.



Therefore we conducted a multi-university survey to find out the current status of EBM education in each school from students' viewpoints.

Outline of the Presentation

1. Background

2. Methods

3. Results & Discussion

2. Methods

Our survey focused on three areas:

- 1) curriculum of EBM
- 2) the students' evaluation on EBM education
- 3) EBM reading skills

2. Methods

On-line questionnaire by using Google Form

EBM教育に関するアンケート

*必須

アンケート対象者

医学部医学科に在学していますか？ *

はい、在学しています

いいえ、在学していません

戻る 次へ

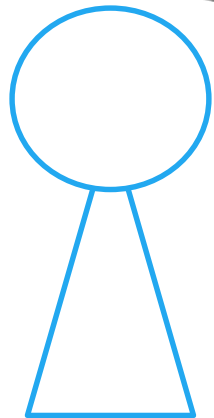
Google フォームでパスワードを送信しないでください。

296 responders in
19 universities
March 21-27

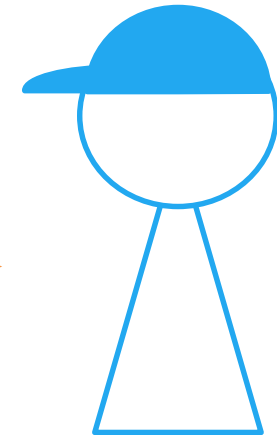
This questionnaire was
conducted in Japanese.

2. Methods

Questionnaire



student
researcher

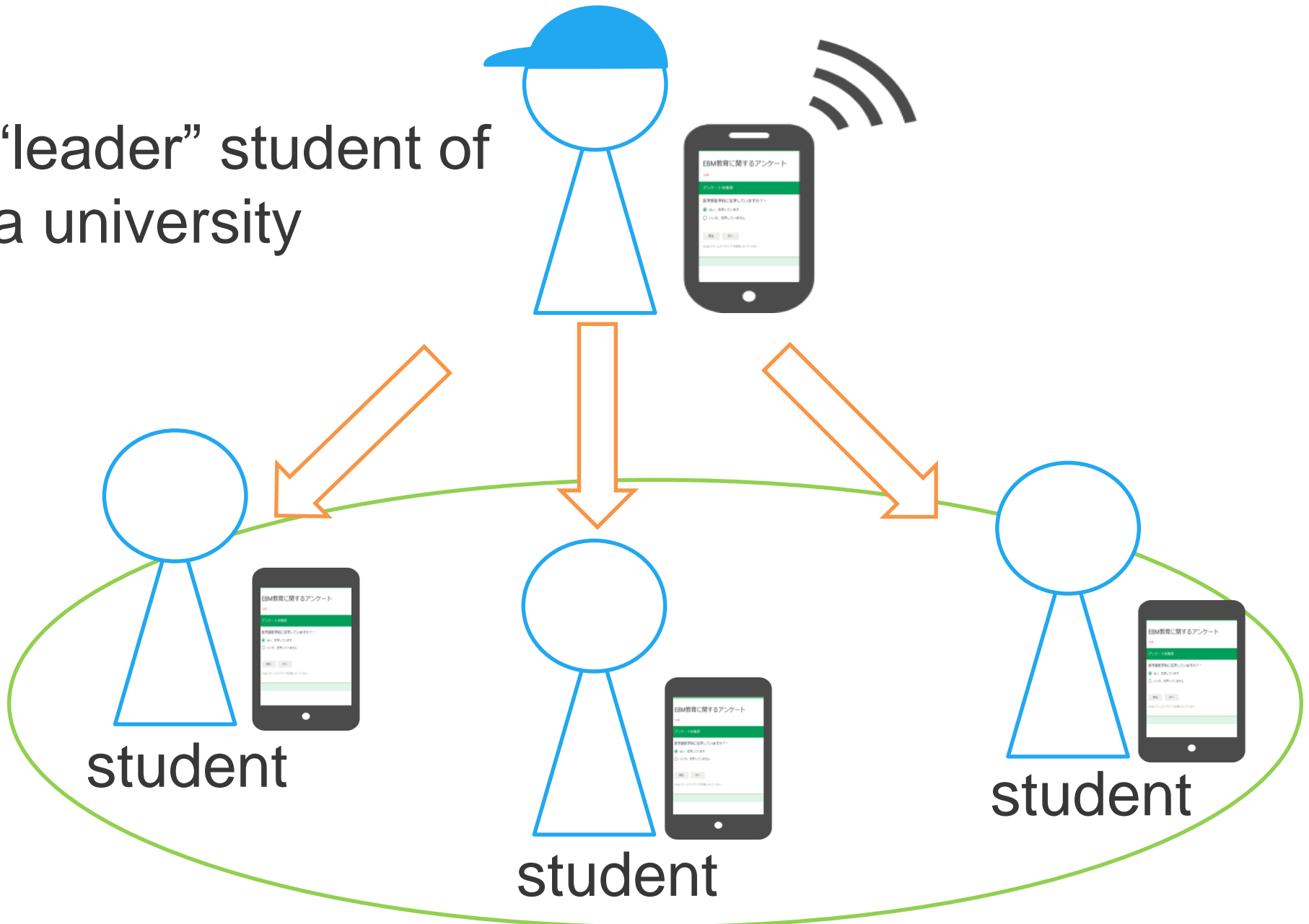


“leader” student of
a university



2. Methods

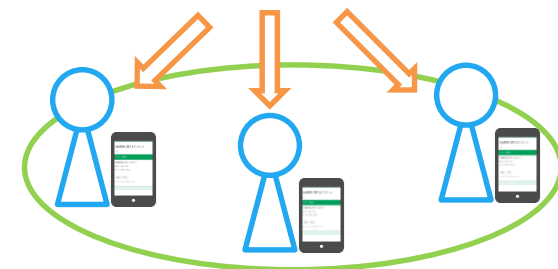
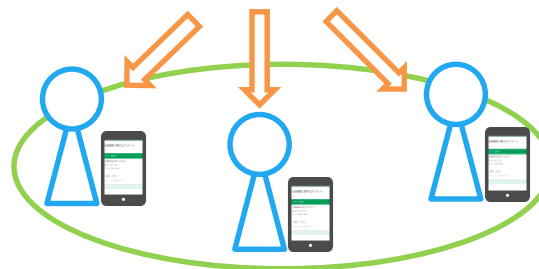
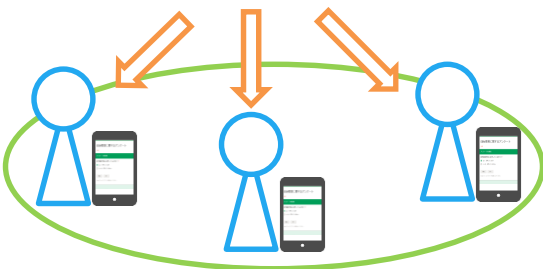
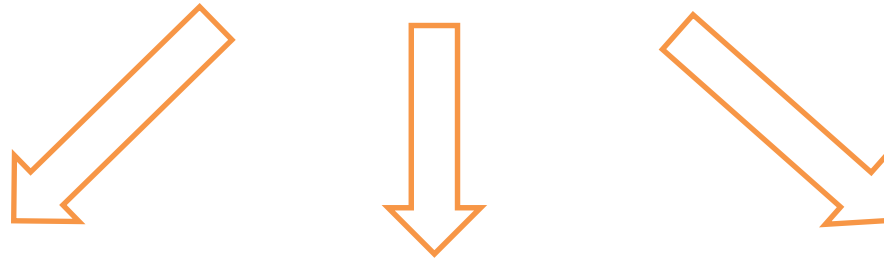
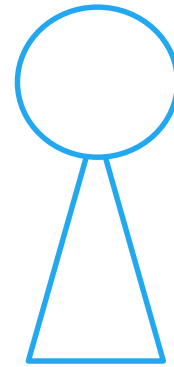
“leader” student of a university



2. Methods

student
researcher

Questionnaire



Outline of the Presentation

1. Background

2. Methods

3. Results & Discussion

3. Result & Discussion

Our survey focused on three areas:

- 1) curriculum of EBM
- 2) the students' evaluation on EBM education
- 3) EBM reading skills

3. Result & Discussion

Our survey focused on three areas:

1) curriculum of EBM

2) the students' evaluation on EBM education

3) EBM reading skills

3. Result & Discussion

286 eligible responders belong to following universities.

Aichi Med Uni	47	Mie Uni	10
Showa Uni	42	Dokkyo Med Uni	5
Sapporo Uni	35	Toyama Uni	5
Fujita Health Uni	25	Osaka Uni	4
Kyoto Uni	25	Tokushima Uni	4
Gifu Uni	21	Tohoku Uni	1
Uni of the Ryukyus	19	Tokyo Uni	1
Nagoya City Uni	15	National Defense Med College	1
Nagoya Uni	13	Hyogo Med Uni	1
Kanazawa Med Uni	12		

Don't agree to answer or don't belong to medical school

10

Consent and Profile question

296

286

Have you taken classes on EBM?

No 159

Yes 127

Have you been taught how to read clinical research papers in EBM classes?

No 42

Yes 85

About reading comprehension of the article
Free response (Description) 286

Curriculum of EBM

Have you taken classes on EBM?

Yes

127

No

159

n=286

Curriculum of EBM

In which subject did you learn EBM?

(multiple answers allowed)

subjects	number of answers	number of universities
English	54	11
Social medicine	27	8
EBM lectures	20	6
Bedside learning	18	7
Clinical lectures	10	6
Statistics or mathematics	6	5
Basic medicine labs etc.	4	3
(Don't remember)	4	3
	n=85 (student)	n=19 (university)

3. Result & Discussion

Our survey focused on three areas:

- 1) curriculum of EBM
- 2) the students' evaluation on EBM education
- 3) EBM reading skills

Keller's ARCS Model of Motivation

Did you find the EBM classes interesting?

Yes 62.2%

Did you find the EBM classes useful?

Yes 70.1%

Attention

Relevance

Learner Motivation

Confidence

Satisfaction

Do you feel more confident in reading clinical research papers after EBM classes?

Yes 26.8%

Were you satisfied with the EBM classes?

Yes 61.4%

n=127

3. Result & Discussion

Our survey focused on three areas:

- 1) curriculum of EBM
- 2) the students' evaluation on EBM education
- 3) EBM reading skills*

3. Result & Discussion

3) EBM reading skills*

*We define “EBM reading skills” as skills in extracting information from **clinical research papers written in English**, in order to conduct EBM.

EBM reading skills

What factor(s) gives you difficulty in reading clinical research papers? (multiple answers allowed)

Factors	number of answers	number of universities
Medical knowledge	118	16
English	96	16
Critical appraisal	86	17
Statistics	74	14
	n=286 (student)	n=19 (university)

EBM reading skills

Questions for students' self-assessment of EBM reading skills

- Can you find the **research question** in a clinical research paper?
- Can you extract **PICO (PECO)** from a clinical research paper?

n=286

EBM reading skills

	Yes	No
Can you find the research question in a clinical research paper?	32.9%	67.1%
Can you extract PICO (PECO) from a clinical research paper?	18.9%	81.1%

n=286

Summary part 1

Students' perceptions:

- 56% of the responders took EBM classes.
- Through EBM classes, 60% became motivated regarding Attention, Relevance, and Satisfaction; less than 30% gained Confidence.
- About one third were able to find the research question and a little less than 20% were able to extract PICO.

Further analyses

Students' perceptions:

Through EBM classes, 60% became motivated regarding Attention, Relevance, and Satisfaction; less than 30% gained **Confidence**.



To find out the reasons why less students felt **confident** in reading clinical research papers, we conducted further analyses.

Cross tabulation

1. Responses to analyze

- Have you taken **classes on EBM?**
- **VS**
- Can you find **research question** in a clinical research paper?



We analyzed the data using **Fisher's Exact test.**

Cross tabulation

	Students who did not take EBM classes	Students who took EBM classes
Students who said they couldn't find the research question	135	57
Students who said they could find the research question	24	70
Total	159	127

p-value<0.001 (Fisher's Exact test)

Cross tabulation

	Students who did not take EBM classes	Students who took EBM classes
Students who said they couldn't find the research question	135	57
Students who said they could find the research question	24	70
Total	159	127

p-value<0.001 (Fisher's Exact test)

Cross tabulation

	Students who did not take EBM classes	Students who took EBM classes
Students who said they couldn't find the research question	135	57
Students who said they could find the research question	24	70
Total	159	127

p-value < 0.001 (Fisher's Exact test)

Cross tabulation

2. Responses to analyze

- In total, **how many clinical research papers** did you read for practice in class?

VS

- Can you extract **PICO (PECO)** from a clinical research paper?



We analyzed the data using **Fisher's Exact test.**

Cross tabulation

	Number of papers students read	
	0 to 5	more than 6
Students who said they couldn't extract PICO	42	6
Students who said they could extract PICO	21	16
Total	63	22

p-value=0.0023 (Fisher's Exact test)

Cross tabulation

	Number of papers students read	
	0 to 5	more than 6
Students who said they couldn't extract PICO	42	6
Students who said they could extract PICO	21	16
Total	63	22

p-value=0.0023 (Fisher's Exact test)

Cross tabulation

	Number of papers students read	
	0 to 5	more than 6
Students who said they couldn't extract PICO	42	6
Students who said they could extract PICO	21	16
Total	63	22

p-value=0.0023 (Fisher's Exact test)

Summary part 2

Students' perceptions:

- EBM classes significantly improved students' EBM reading skills.
- Practicing by reading more than 6 papers significantly improved EBM reading skills.

Limitations

- We collected the data of students' perceptions but could not measure their actual EBM reading skills.
- We could not randomly choose universities to send the questionnaire to.
- The number of responders varying depending on the university may have affected the results.

Take home messages

- Please teach EBM classes in all medical universities.
- EBM is very difficult for students, so they cannot easily gain confidence in reading clinical research papers written in English.
- To give students confidence in extracting information from clinical research papers written in English, such as PICO, please make them practice reading more than 6 papers.

References

- Holloway, Robert. Teaching and evaluating first and second year medical students' practice of evidence-based medicine. *Medical Education*, 38(8), 868-878, (2004)
- Watanabe, Haruka. A year-round evidence-based medicine-learning course organized by medical students at Ehime University. *Journal of General and Family Medicine*, 18(4), 175-179, (2017)
- Kitazawa, Kyoko. Questionnaire survey on Evidence-Based Medicine (EBM) education at the sixth grade medicine department and pharmacy college nationwide. *Japanese Journal of Pharmaceutical Education*, 1, 2017-007, (2017)
- Kanda, Y. Investigation of the freely available easy-to-use software 'EZR' for medical statistics. *Bone Marrow Transplantation*, 48, 452–458, (2013)
- Keller, J. M. Development and use of the ARCS model of instructional design. *Journal of instructional development*, 10(3), 2-10, (1987)
- Gaines, J. M. Research on the Effect of Blood-Letting in Several Inflammatory Maladies Translation of an Article by Pierre-Charles-Alexander Louis (*Arch. gen. Méd.* 321-336, 1835), with Introduction. *Arch Intern Med*, 106(4), 571-579, (1960)

Correspondence

Tomoki Hirata: hirata.tomoki.089@mail.aichi-med-u.ac.jp

Contents of questionnaire ①

1. Do you consent to the above-stated conditions?
2. Are you a medical student?
3. Which university do you belong to?
4. What year are you in?
5. Have you taken classes on EBM?
6. What teaching materials were used in your EBM class?
Choose one or more from the list below.
7. What percentage of your EBM class did you attend?
8. Do you think EBM classes are necessary?
9. Did you find the EBM classes useful?
10. Did you find the EBM classes interesting?
11. Do you feel more confident in reading clinical research papers after taking EBM classes?
12. Were you satisfied with the EBM classes?

Contents of questionnaire ②

13. Were you taught how to read clinical research papers in the EBM class?
14. In which subject(s) did you learn how to read clinical research papers? Choose one or more from the list below.
e.g. English, EBM, Social Medicine, etc.
15. In total, how many hours did you spend practicing reading clinical research papers in class?
16. In which year(s) did you learn how to read clinical research papers?
Choose one or more from the list below.
17. In total, how many clinical research papers did you read for practice in class?
18. Can you find research question in a clinical research paper?
19. Can you extract PICO (PECO) from a clinical research paper?
20. What factor(s) gives you difficulty in reading clinical research papers? Choose one or more from the list below. e.g. English, Statistics, Critical scrutiny, Medical knowledge.