

# Prioritization of Human physiology Topics for medical school, what to teach? Expert Teachers' views

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## Research article

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# Abstract

**Background:** There has been a sustained increase in physiology knowledge in the last century that created a growing problem for educationalists and we lack general agreement on the educational content of the physiology course for medical students.

**Methods:** This was a descriptive cross-sectional study that involved physiology teachers with different categories of academic ranking including associate professors, assistant professors, and lecturers who were working at physiology departments in different faculties of medicine on the date of the study. A standardized self-administered questionnaire was developed, pre-tested, and used for data collection from the study population. The collected data was analyzed by the use of computerized statistical package Statistical Package for the Social Sciences (SPSS) version 23.0.

**Results:** The respondents were asked to determine the importance of the topics using three criteria: frequency of encounter, burden, and seriousness, then based on the total score; topics were divided into core (need to know), recommended (good to know), proposed (nice to know). All the contents of physiology subjects were listed and topics were prioritized accordingly. Finally, we established a list of 53 core (need to know) topics. There was no significant correlation found between the current academic status of the participants and Important of the topics. These findings provided evidence of the presence of general agreement among physiologists on the core physiology educational content that need to be taught to medical students.

## Background

Human physiology courses are aimed to clarify the specific characteristics and mechanisms of the human body in health and diseases (1). It requires mastery of different talents; not only for memorizing facts; but also, for a large number of new terms, mechanisms, and concepts that introduce as well as extensive problem-solving ability. In the process of becoming a clinician, medical undergraduates acquire knowledge not only through listening to lectures and reading medical textbooks but also through solving scientific and clinical problems (2–5). So critical thinking is increasingly important in an era where biomedical sciences are advancing at a rapid rate. Developing the ability to think critically is an important element of undergraduate physiology education and is influenced by multiple factors such as the learning environment as well as by the instructor's approach to teaching (2). Instead of simply providing and returning knowledge, the medical curricula should challenge students to struggle for critical scientific thinking, solving clinical problems, and communicating with the patients (3). Research has proven that, when used in conjunction with other teaching methods, lectures create an active learning environment (4).

Different factors could make physiology hard for students to learn, such as the characteristics of the physiology as subject matter, how it relates to other subjects, how students' reason about it, and how they communicate their knowledge and understanding of it. Another important factor is how we teach

physiology and what students bring to the learning environment; for instance: prior knowledge and skills to which they have access, their attitude towards learning, and what it means to understand something, as well as the “student skills” accumulated over their years of schooling. Ultimately, all these factors interact with one another (4, 9).

There is no universal agreement on what the content of physiology courses to medical students should include. In physics, for example, the physics curriculum is remarkably similar in all colleges that offer a degree in physics (5). Accordingly, can the physiology education community define what students should learn, as well as developing instruments to allow physiology teachers to determine what students should know?

This study aimed to determine the educational contents and its classification in the undergraduate physiology courses in the medical curriculum from views of expert teachers.

## Methods

**2.1 Study design and setting:** This is a descriptive cross-sectional study; it involved different medical faculties.

**2.2 Study population:** The study population was composed of physiology teachers who graduated from a different academic background such as Bachelor of Medicine/Bachelor of Surgery (MBBS) and a Bachelor's degree in science. The population was composed of various categories of academic ranking including associate professors, assistant professors, and lecturers who were working at physiology departments in different faculties of medicine on the date of the study. The total number of study participants mounted to 22.

**2.3 Data Collection and Entry:** A self-administrated questionnaire was developed after an extensive literature review. This was further modified by consulting other medical education specialties. The modified questionnaire was piloted on 5 physiology teachers to ensure the validity and consistency of the questions. The feedback of the participants of the pilot group was incorporated and utilized in the finalization of the questionnaire. Data was collected by a software program, a web survey (SurveyMonkey.com). The surveys were not anonymous. Respondents were asked to identify the institutions at which they are teaching, the nature of the program in which they teach, and their years of physiology teaching experience. Upon closing the survey, the accumulated results were exported from SurveyMonkey into Microsoft excel and Statistical Package for the Social Sciences (SPSS). Data were cleaned through revising for duplications, missing, and ambiguous data.

**2.4 Sampling:** The URL of the web survey (SurveyMonkey.com); was distributed to the social media of Sudanese physiological society group in WhatsApp and also posted in the IUPS (international union of physiological sciences) group email on yahoo.com. The survey was held open for four months.

**2.5 Study questionnaire** It was designed for the use of teachers of Human Physiology in medical schools to assist in determining the topics that should be covered in an undergraduate medical curriculum as well as teaching and learning methods for each component of the physiology course. The questionnaire was divided into three parts:

First Part: Respondents profile and experience.

Second Part: Determination of the importance of topics, participants were requested to go through the topics and; based on their experience, using the following criteria:

- I. **Frequency of encounter:** How common and prevalent the condition is and how frequent will the graduate likely need which he/she is going to learn during his/her practice and/or education. Grades were from 3 to 0.
- II. **Burden:** How does the condition affect the individual and/or the community medically (suffering, morbidity, disability & mortality) and socio-economically. Grades were from 3 to 0.
- III. **Seriousness:** How serious is it if a graduate did not learn about this condition and he/she is faced with situations in which he needed the information & skills related to this topic. Grades were from 2 to 0.

Interpretation of the total score for each item (table 1): 6-8 = core (need to know), 3-5 = recommended (good to know), 1-2 = proposed (nice to know).

Third part:

Participants were asked to:

- Propose the best teaching/learning methods for each topic.
- Write the number of activities for each topic.

Part four: Teachers had the chance to write the unlisted topics and themes

## **2.6 Statistical analysis:**

The data were analyzed by the use of SPSS version 23. Univariate and bivariate analyses were carried out. The univariate analysis was focused on drawing percentages, proportions of the participated teachers such as personal characteristics, academic background, and years of experience. In addition to the bivariate analysis that includes cross tables to show relationships between important variables as well as the conduct of statistical test of significance i.e. Chi-Square test.

## **Results**

Twenty-two physiologists responded to our study questionnaire. Regarding the background characteristics of the respondents; the majority of were doctors who graduated from medical schools

(54.5%) and the rest from the faculty of science (45.5%). While the highest level of professional education in Human physiology, ten teachers obtained a master's degree, nine with a Ph.D., whereas three attained Post Doc. The participants are currently working in faculties of Medicine and their academic ranking are Lecturer (n=10), Assistant professor (n=6), and Associate professor (n=6).

Regarding the total years of professional experience in teaching physiology among our participants; the mean value was 9.727 years  $\pm$  5.28 Stander Deviation, the maximum was 20 years and minimal was 3 years. When comparing the duration of professional experience in teaching physiology; the highest years found after the participants obtained their Ph.D. degree (7.67 years), 4.16 Years after MSc, and 1.57 Years before MSc. Associate professors had the highest teaching experience with a mean of 13.67 years, while the Assistant professors had 12.26 years and 5.9 years for the lectures. Adding to that fifteen physiologists had a mean of 5.5 years' experience in teaching physiology in the traditional curriculum, while eleven participants had 3 years' experience in participating in an integrated curriculum, and eight of them involved in problem base learning style (figure 1).

In the second part of the questionnaire, all the contents of Human Physiology subjects were listed in a table base on the Guyton Textbook of medical physiology (1) (for undergraduate, medical, and graduate-level). The contents were divided into 14 units. The participants were asked to determine the importance of each subunit using three criteria: (table 1) core (need to know), recommended (good to know), proposed (nice to know). In table 2, we listed the core (need to know topics). Moreover, table 3 Table compares between medical and non-medical participants regarding the importance of some clinically oriented topics. In the third part of the questionnaire, the participants were asked to identify the best teaching and learning methods/methods based on their experience that included lecture, tutorial/seminar, Problem-based learning (PBL)/case presentation, assignment, practical and/or self-study. Figure 2 shows that lectures are the most common teaching and learning methods that had been selected by the teachers.

## Discussion

The flare-up of knowledge in sciences, and particularly in physiology, has created a growing problem for teachers, with more to know; than students can learn. Consequently, difficult choices have to be made about what we expect students to master, as there is no global agreement on what students should learn. This study surveyed faculty members who teach physiology at colleges, universities, and medical schools to determine their views about the educational content and its priority in the undergraduate physiology curriculum from their experience. Participating teachers had a mean value of 9.73 years of professional experience in teaching physiology, rang from 3–20 years. Although it is challenging to define an expert teacher as the time for the development of expertise differs in every field, but it estimates for expertise to develop in teaching to be 5 or more years (6). Lopez's data proposed the existence of a positive correlation between years of teachers' experience and students' successes, as the average student's achievement on standardized tests goes up every year for the first 7 years of a teaching career (7). In

contrast, other studies reported that differences between expert, beginning, and novice teachers were not found in their thinking about planning or in their curricula decision-making (13, 14).

The major limitation of this study was the sample size was very small; it involved only twenty-two physiology teachers with heterogeneous background characteristics. 45.5% of them were nonmedical teachers, this might be hard for them to prioritize clinically orient topics. Table 3 demonstrates a comparison between medical and non-medical participants regarding the selection of the importance of the topics in some of the clinically oriented subjects. No obvious difference between medical and nonmedical participants and this possibly due to the small sample size.

There was considerable agreement among physiology teachers' who responded to our survey about the most important core topics (need to know) (Table 2), despite the variation in academic status, and consequently the years of experience no significant difference was found between them. It worth mentioning that, our respondents are from different countries such as Sudan, Saudi Arabia, USA, and England, despite this diversity of the faculty members responding to our surveys there are high levels of agreement in their responses. This supports our research hypothesis that there is a possibility to identify the core content of physiology topics for undergraduate medical students. Our listed core contents were very similar to those reported by Michael *et al* (8), they published core principles or ideas; but not contents. They identified 15 core principles and then rank order these 15 core principles, independently, to identify the most important for students to understand. The five most important core principles for general physiology were "cell membrane," "homeostasis," "cell-to-cell communications," "interdependence," and "flow down gradients or transport across the cell." Interdependence describes cells, tissues, organs, and organ systems interact with one another (are dependent on the function of one another) to sustain life. While, flow down gradients describes the transport of "stuff" (ions, molecules, blood, and air) is a central process at all levels of the organization.

It had been reported that both quantity and quality of learning is determined by teaching methods, so it plays an important role in influencing the outcome of any educational effort (16, 17). Several studies validated the importance of how we teach over what we teach (18–20).

Regarding part three selection of the preferred teaching and learning methods; the physiology educators were asked to select the best teaching and learning methods for each topic, and then mean value was calculated for lectures, tutorials/seminars, PBL/case presentations, assignments, practical sessions, and self-study. Moreover, this finding indicated that teachers prefer more contact hours for lectures in compared to practical, tutorials, seminars and others teaching and learning methods, as Fig. 2 showed that one hour lecture was the most desirable teaching methods with a total mean of  $69 \pm 0.36$  hours followed by tutorials/seminars, PBL/case presentations, assignments, self-study and least proportion for practical sessions. Practical works were neglected by our respondents as estimated a total of 10 practical sessions among all physiology courses and these negative results showed the fact that most of the faculties of medicine don't conduct hands-on practice currently. This finding is in opposition to the decrease in global interest in didactic lectures, even in low-resource settings (20, 21). Obviously, teachers

can't cover all the content in lectures and any effort to do this will limit our student's ability to self-learning (9). The majority of our students came from a pre-university education system that resists self-directed learning. So, they move to the university with a passive rather than active learning attitude. Consequently, students might contribute to this outcome, indirectly; as they rebel changes through their liking for their familiar teaching settings. Furthermore, it is essential to prepare both students as well as instructors for their role in the learning process (10).

Figure 1 illustrates that our participants had experience in teaching physiology in a traditional curriculum 15 teachers with mean 5.5 years' experience, while only 8 respondents (36.4%) practice PBL. These findings have influenced the selection of learning methods by our teachers, resulting in a higher rate of lectures compared to other learning methods. Nandi et al reported that the selection of teaching/learning methods is influenced by many factors, such as teaching characteristics, departmental characteristics, and assessment methods (11). Our finding runs in contrast to the growing evidence that basic science knowledge learned in the context of a clinical case is actually better comprehended and more easily applied by medical students than basic science knowledge learned in isolation (12). It is worth mentioning that, interactive teaching methods should be introduced instead of didactic lectures. PBL, self-directed study (SDL), and small group discussion are examples of student-centered activities that can help students to be motivated to become lifelong learners after graduation (24, 25).

## Conclusions

There is general agreement among the respondents on the classification of physiology educational content; despite the variation in the academic ranking, years of experience, and professional qualifications. It appears that there are similar core contents, principles, and ideas of physiology as a discipline that are obvious to physiologists. This constancy is significant as it suggests that the results of this survey can be applicable across a broad spectrum of physiology courses in different institutions. We established a list of core topics (need to know) that undergraduate medical students should master. Lectures were the most preferable learning teaching methods to our respondents; this may link to the fact that our participants had a great experience in a traditional curriculum (teacher center style).

## Abbreviations

Bachelor of Medicine/Bachelor of Surgery (MBBS)

International union of physiological sciences (IUPS)

Problem-based learning (PBL)

statistical package Statistical Package for the Social Sciences (SPSS)

self-directed study (SDL)

# Declarations

## Ethics approval and consent to participate

An ethical clearance was obtained from the institutional Review Board at University of Khartoum. A verbal consent was obtained from each participating teacher before handling the questionnaire.

**Consent for publication:** Verbal consent was obtained from the participants

**Availability of data and material:** The study questionnaire has been provided as a supplementary file. More information on data material can be obtained from the corresponding Author.

## Competing interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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## Authors' contributions

HAA and ASE designed the study, HAA coordinated and conducted the statistical analysis, procedures, and drafting of the manuscript. All the authors read and approved the final version.

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# References

1. Arthur C Guyton, Hall. JE. Textbook of medical physiology Eleven ed. Philadelphia, Pennsylvania 19103-2899: Elsevier Inc. ; 2006.

2. American Association for the Advancement of Science. Vision and Change: a Call to Action (online). . [http://visionandchange.org/files/2010/03/VC\\_report.pdf](http://visionandchange.org/files/2010/03/VC_report.pdf) [17 August 2011].
3. Association of American Medical Colleges. Scientific Foundations for Future Physicians. Washington, DC: Association of American Medical Colleges, 2009. 2009.
4. Michael J. What makes physiology hard for students to learn? Results of a faculty survey. *Adv Physiol Educ* [Internet]. 2007;31(1):34–40.
5. Abraham RR, Upadhya S, Torke S, Ramnarayan K. Clinically oriented physiology teaching: strategy for developing critical-thinking skills in undergraduate medical students. *Adv Physiol Educ*. 2004;28(3):102–4.
6. Swing SR. The ACGME outcome project: retrospective and prospective. *Med Teach*. 2007;29(7):648–54.
7. Christianson CE, McBride RB, Vari RC, Olson L, Wilson HD. From traditional to patient-centered learning: curriculum change as an intervention for changing institutional culture and promoting professionalism in undergraduate medical education. *Acad Med*. 2007;82(11):1079–88.
8. Graffam B. Active learning in medical education: Strategies for beginning implementation. *Med Teach*. 2007;29(1):38–42.
9. Jamieson S. Likert scales: how to (ab) use them. *Med Educ*. 2004;38(12):1217–8.
10. Klymkowsky MW, Garvin-Doxas K, Zeilik M. Bioliteracy and teaching efficacy: what biologists can learn from physicists. *Cell Biol Educ*. 2003;2(3):155–61.
11. Berliner DC. Learning about and learning from expert teachers. *Int J Educ Res*. 2001;35:463–82.
12. Lopez OS. Classroom diversification: A strategic view of educational productivity. *Rev Educ Res*. 2007;77(1):28–80.
13. Livingston C, Borko H. Expert-novice differences in teaching: A cognitive analysis and implications for teacher education. *J Teach Educ*. 1989;40(4):36–42.
14. Leinhardt G, Greeno JG. The cognitive skill of teaching. *J Educ Psychol*. 1986;78(2):75.
15. Michael J, Modell H, McFarland J, Cliff W. The “core principles” of physiology: what should students understand? *Adv Physiol Educ*. 2009;33(1):10–6.
16. Abraham RR, Vinod P, Kamath MG, Asha K, Ramnarayan K. Learning approaches of undergraduate medical students to physiology in a non-PBL-and partially PBL-oriented curriculum. *Adv Physiol Educ*. 2008;32(1):35–7.
17. Abraham RR, Upadhya S, Torke S, Ramnarayan K. Clinically oriented physiology teaching: Strategy for developing critical-thinking skills in undergraduate medical students. *Am J Physiol - Adv Physiol Educ*. 2004; 28(3):102–4.
18. DiCarlo SE. Too much content, not enough thinking, and too little FUN! *Adv Physiol Educ*. 2009;33(4):257–64.
19. Prosser M, Trigwell K. Student Learning and the Experience of Teaching. *HERDSA Rev High Educ*. 2017.

20. Anyaehie USB, Nwobodo E, Oze G, Nwagha UI, Orizu I, Okeke T, et al. Medical students' evaluation of physiology learning environments in two Nigerian medical schools. *Adv Physiol Educ.* 2011;35(2):146–8.
21. Nandi PL, Chan JN, Chan CP, Chan P, Chan LP. Undergraduate medical education: comparison of problem-based learning and conventional teaching. *Hong Kong Med J.* 2000;6:301–6.
22. Kaddam L, Khidir M, Elnimeiri M. Students' perceived value of physiology course activities in a Sudanese medical faculty. 2012;298–301.
23. Patel VL, Evans DA, Kaufman DR. Reasoning strategies and the use of biomedical knowledge by medical students. *Med Educ.* 1990;24(2):129–36.
24. Murad MH, Varkey P. Self-directed learning in health professions education. *Ann Acad Med Singapore.* 2008;37:580.
25. Pai KM, Rao KR, Punja D, Kamath A. The effectiveness of self-directed learning (SDL) for teaching physiology to first-year medical students. *Australas Med J.* 2014;7(11):448.

## Tables

**Table 1: Criteria for prioritization of the content**

Nu.	Criteria	grades			
1.	<b>Frequency of encounter (FOE):</b> how common & prevalent the condition is & how frequent will the graduate likely need which he/she is going to learn during his/her practice and/or education	<b>Very frequent</b>  = 3	<b>Frequent</b>  = 2	<b>Not frequent or rare</b>  = 1	<b>Not at all</b>  = 0
2.	<b>Burden:</b> how does the condition affect the individual and/or the community medically (suffering, morbidity, disability & mortality) & socio-economically	<b>High burden</b>  = 3	<b>Moderate burden</b>  = 2	<b>Low burden</b>  = 1	<b>No burden</b>  = 0
3.	<b>Seriousness:</b> how serious is it if a graduate did not learn about this condition & he/she is faced with a situations in which he needed the information & skills related to this topic	<b>Very serious</b>  = 2	<b>Serious</b>  = 1	<b>Not serious</b>  = 0	
<b>Interpretation of the total score for each item:</b> <b>6-8 = core (need to know), 3-5 = recommended (good to know), 1-2 = proposed (nice to know)</b>					

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**Table 2: List of core Topics (need to know)**

**Core need to know topics**

**topics**

**Functional Organization of Human Body and Control of "Internal Environment"**

**The Cell and Its Functions**

**Transport of substances through cell membrane**

**Membrane potentials and action potentials**

**Contraction and excitation of skeletal muscle**

**Contraction and excitation of smooth muscle**

**Heart muscle; the heart as a pump**

**Rhythmical excitation of heart**

**Normal Electrocardiogram**

**Vascular distensibility and functions of arterial and venous systems**

**Nervous regulation of the circulation**

**Rapid control of arterial pressure**

**Role of the kidney in long-term regulation of arterial pressure and in hypertension**

**Cardiac output, venous return, and their regulation**

**Coronary Circulation**

**Ischemic Heart Disease**

**Cardiac Failure**

<b>Heart Valves and Heart Sounds</b>
<b>Circulatory Shock</b>
<b>Body Fluid Compartments and Edema</b>
<b>Urine Formation by the Kidneys</b>
<b>Regulation of Extracellular Fluid Osmolarity</b>
<b>Integration of Renal Mechanisms for Control of Blood Volume and ECF</b>
<b>Regulation of Acid-Base Balance</b>
<b>Diuretics</b>
<b>Red Blood Cells</b>
<b>Anemia, and Polycythemia</b>
<b>Resistance of the Body to Infection</b>
<b>Blood Types; Transfusion</b>
<b>Hemostasis and Blood Coagulation</b>
<b>Pulmonary Ventilation</b>
<b>Pulmonary Edema,</b>
<b>Pleural Fluid</b>
<b>Transport of Oxygen and Carbon Dioxide in Blood and Tissue Fluids</b>
<b>Regulation of Respiration</b>

<b>Respiratory Insufficiency</b>
<b>Organization of the nervous system, basic functions of synapses</b>
<b>Sensory Receptors</b>
<b>Motor Functions of the Spinal Cord; the Cord Reflexes</b>
<b>Cortical and Brain Stem Control of Motor Function</b>
<b>Contributions of the Cerebellum and Basal Ganglia to Overall Motor Control</b>
<b>Cerebral Cortex</b>
<b>Intellectual Functions of the Brain: Learning and Memory</b>
<b>Autonomic Nervous System and Adrenal Medulla</b>
<b>Cerebral Blood Flow and Cerebrospinal Fluid</b>
<b>General Principles of Gastrointestinal Function, Motility, Nervous Control, and Blood Circulation</b>
<b>Pituitary Hormones and Their Control by the Hypothalamus</b>
<b>Thyroid Metabolic Hormones</b>
<b>Adrenocortical Hormones</b>
<b>Parathyroid Hormone, Calcitonin, Calcium and Phosphate Metabolism</b>
<b>Reproductive and Hormonal Functions of the Male</b>
<b>Female Physiology Before Pregnancy and Female Hormones</b>
<b>Pregnancy and Lactation</b>

**Table 3: Comparison between medical and non-medical participants regarding the importance of some clinically oriented topics**

Clinically Oriented Topics		Science	MBBS
		Frequency	Frequency
Cardiac arrhythmias & their electrocardiographic interpretation	Core (need to know)	3	6
	Recommended (good to know)	7	5
	Proposed (nice to know).	0	1
Role of the kidney in long-term regulation of arterial pressure and in hypertension	Core (need to know)	8	10
	Recommended (good to know)	2	2
	Proposed (nice to know).	0	0
Ischemic Heart Disease	Core (need to know)	7	8
	Recommended (good to know)	2	2
	Proposed (nice to know).	1	2
Body Fluid Compartments and Edema	Core (need to know)	7	9
	Recommended (good to know)	3	3
	Proposed (nice to know).	0	0
Anemia, and Polycythemia	Core (need to know)	7	6
	Recommended (good to know)	3	4
	Proposed (nice to know).	0	2
Lymphatic Edema	Core (need to know)	7	7
	Recommended (good to know)	2	5
	Proposed (nice to know).	1	0
Respiratory Insufficiency	Core (need to know)	7	6
	Recommended (good to know)	3	5
	Proposed (nice to know).	0	1
Epilepsy	Core (need to know)	3	3
	Recommended (good to know)	4	5
	Proposed (nice to know).	3	4

	know).		
ysiology of Gastrointestinal Disorders	Core (need to know)	6	4
	Recommended (good to know)	3	8
	Proposed (nice to know).	1	0

\*Core need to know topics scored between 6-8.

## Figures

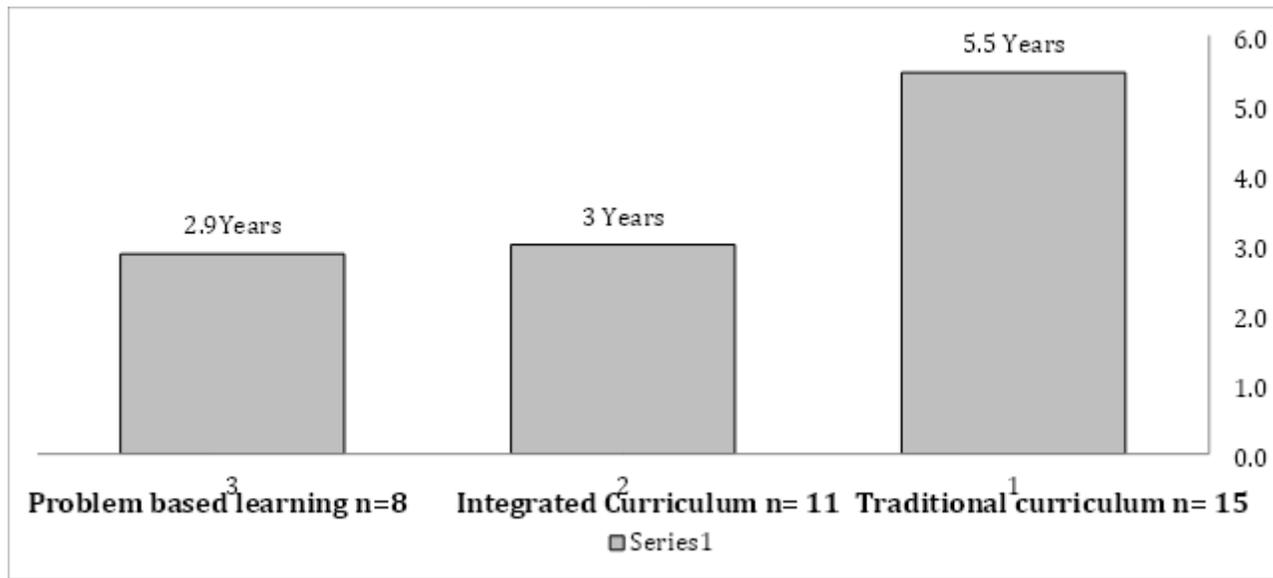
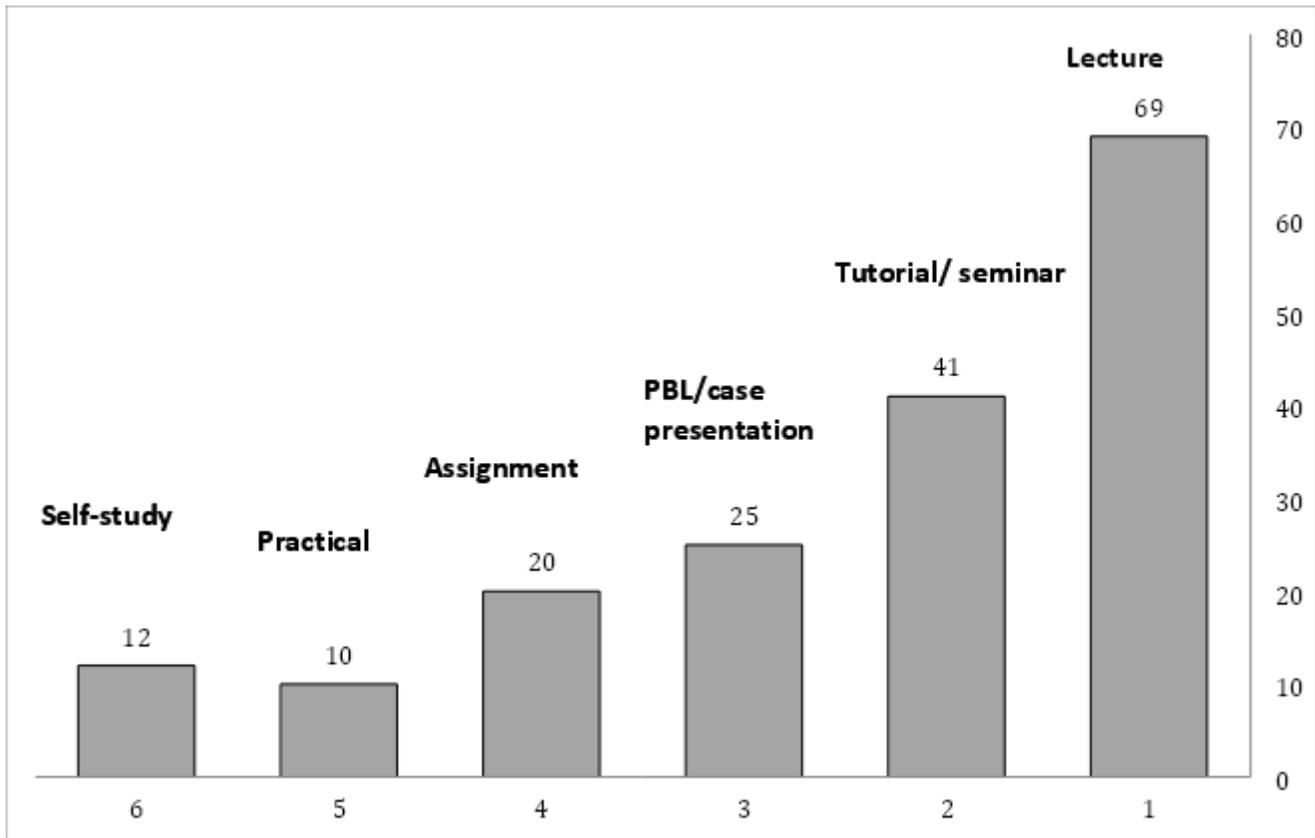


Figure 1

Experience of physiology teachers in different Curriculum frameworks



**Figure 2**

Total mean value of different teaching and learning methods.

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [questionnaire.docx](#)
- [STROBEchecklistcrosssectional1.doc](#)