

Evidence-Based Health In Primary Care: Among Electronic Portals, Telehealth And Digital Libraries

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Abstract

Background: To make an analysis and propose solutions to improve the teaching and learning process in the scenario of the Basic Family Health Units (BFHU).

Method: First phase: Authors conducted a qualitative-quantitative study with students and preceptors of Primary Care containing open and closed questions from medical schools. The closed questions were presented as descriptive statistics and the open ones from the creation of categories. It was pointed out the perception of the main problems for teaching learning.

Second phase: Meetings were held from students and respective preceptor for 6 months, using electronic portals, through the application of new questionnaires, using the Likert scale in pre and post evaluation.

Results: On the first phase, 40% of the students considered as a problem the degree of training of the local preceptor. A similar result was found in the speech of the teacher, which categorization revealed a lack of adequacy between training and performance in Primary Care in most of the categories created. Based on our results, we used the BHFU to apply new strategies little used for teaching and learning, in order to improve health practices, such as the use of the Evidence Based Health portal, which has shown greater navigability and offers studies with clinical evidence criteria. On the second phase, the authors identified an improvement in the quality of learning both by the preceptor and by the students.

Conclusions: The use of electronic portals can be a tool that legitimized or enhance the teaching and learning (teaching/learning space) in BHFU.

Background

In 2017, the World Federation for Medical Education (WFME) estimated that there were approximately 2900 medical schools around the globe (<https://wfme.org/world-directory/>), in Brazil, the second largest country, in 336 medical schools, only, getting behind India (392) (<https://www.escolasmedicas.com.br/escolas-medicas-brasil-e-internacionais.php>). The exercise of medical work in the perspective of an integral health care, which considers biopsychosocial aspects and the provision of equal care, is far from its daily practice [1, 2].

The medical schools may seem similar, but there are numerous differences in their curricula and the types of training they provide.

In fact, the organization of a political-pedagogical project, teaching method or strategy adopted by medical schools without considering the field of care and the centrality of the user, is considered as a limited potential strategy for the modification of educational work in health. This work is still often structured in mechanistic and fragmenting hegemonic logic. Regarding, studies show that clinical practice should be exercised primarily as space of resistance and creation in the education of health professionals, in contrast to the biomedical reductionist model. The latter model also favors the

medicalization and the condition of being healthy in normative standards and statistical parameters, where there is little regard for the subjectivity and affectivity [3, 4].

Practice of medicine should take, whenever possible, a social practice way in order to establish practice in which the production of knowledge, academic training and the provision of services are inseparable [4, 5].

In this context, diversification of teaching-learning scenarios and, the Primary Care (PC) presents itself as an educational axis of a Medicine closer to social responsibility as well as to integrity of health perspective. It would be necessary for the student to experience the reality, the socioeconomic limits of the population and their access to a minimally adequate health, including in classrooms, tutorials and clinical discussions [6]

Despite the previously mentioned assumptions the inclusion in PC presents problems as reported by, Gil et al, (2008), from the experiences in the practice scenarios of the State University of Londrina - UEL - Paraná. These authors point out: (a) "little time for practices with students due to community demands"; (b) students' feeling that they "disturb the service" for not having skills and attitudes that contribute to care, (c) loss of the meaning of home visits made by students who are oriented to diagnose problems of community health, without a proposed solution [7]. Costa (2009) from a qualitative research with students from the 5th of the Medical School found that the inclusion in Basic Family Health Units (BHFU) was less effective in the teaching-learning process due to the lack of better planning that integrates teaching/service and lack of professional health or teachers trained for preceptorship [8]. In addition to these aspects, Ciuffo et al. (2008) and Trajman et al. (2009) pointed out the teacher qualification and training such as the need to use Teaching Methodologies, extended clinical courses and specialization in Family Health and the lack of salary bonus [9, 10]. Thus, what would be the ideal transformation for a possible improvement of PC teaching/learning practice?

Based on the answers in a qualitative and quantitative survey, with students from four Brazilian Medical Schools and their respective preceptors, at PC, we proposed the experimentation and analysis of a new teaching-learning strategy; a condition considered the aim of this study. In this context we chose evidence-based medicine because it plays a fundamental role in clinical decision-making in several medical specialties, since it uses statistical estimates of benefit-risk and harm in the application of these decisions [11, 12].

Method

Investigation

Qualitative research with students and preceptors of PC and analysis of the main problems for teaching-learning in this scenario and possible solutions for its improvement (Appendixes A, B and C);

Implementation of coherent strategy research

Trial of the teaching-learning strategy according to results presented in the first phase research (Appendixes D1 pre and D2 post; E1 pre and E2 post).

Two research phases were created:

First phase:

Research scenario took place in a private medical school: the University Center Serra dos Órgãos (UNIFESO) in Teresópolis - Rio de Janeiro - RJ and in three federal ones: Fluminense Federal University (UFF) - RJ-, Federal University of Tocantins (UFT) and the Federal University of Viçosa (UFV). Criteria for selecting these schools considered the accessibility and availability of teachers/preceptors and their students. In addition, a curricular model focused on completeness and student insertion in PC/BHFU or in new practice scenarios was taken into consideration. Study population consisted of students and preceptors who had already had 1 year of experience in PC/BHFU. We applied questionnaires of 17 closed questions in 237 students from 4 medical courses addressing the topics: (a) motivation for choosing a medical career; (b) perception of the curriculum adopted at its school; (c) influence on participation in PC/BHFU activities, identifying the biggest problem for teaching and learning, and the suggestion for its improvement; and (d) influence of participation in PC/BHFU from the perspective of its professional trajectory.

Selected samples respected the method of probabilistic sampling or simple random from criteria of convenience, accessibility and similar responses. Then, we applied descriptive statistics analysis, for closed questions and categorization for opened questions [13–17].

Simple random sampling consists of assigning each element of the population a unique number and then selecting some of these elements casually. To ensure that the choice of this sample is due to chance, random number tables can be used. These tables consist of numbers presented in columns, consecutive pages [7].

For the purpose of this research, only 2 questions were chosen (Supplemental Appendix A: questions 10 and 11; Appendix B: questions 11 and 12), which included the option of an open answer, addressing the identification of the biggest problem for teaching-learning in PC and the suggestion for its improvement presenting 10 options. These options could receive the number from 1 (high priority) to 10 (low priority).

Answers of the 32 preceptors – 08 of UNIFESO, 13 of UFF and 14 of UFT- to the questionnaire containing 4 opens questions were analyzed from the chosen one question: the perception about their preceptory in the BHFU (see Appendix C).

Second phase:

Then, questionnaires containing 13 assertions were applied to the preceptor and to the students to evaluate the use of the electronic resources. In this way, it was possible to verify the previous and acquired knowledge Evidence Based Medicine (MBE) and electronic portals coherent to this theme in the daily practice of the BHFU. The results were analysed using Likert scale in pre and post evaluations (Appendixes D1 and D2; E1 and E2), according to Norman (2010) and Phelps et al (2015)[18, 19].

A score of 1 to 5 was established for each statement presented. The score was higher as the assertive answer offered represented the degree of pre or post acquired knowledge to the application of the

research and not necessarily a concordance to the answer.

For the composition of the score of the Likert Scale, it was considered for the maximum score of the number of absolute points for each group/preceptor: the multiplication of the number of maximum points of each question; the number of questions of each questionnaire applied, and the number of participants for each questionnaire. The relative number considered the relation between the number of points reached between the possible points for each questionnaire and their respective number of participants (Norman, 2010 and Phelps et al 2015). There was also an open question, in the end of questionnaire, together with the qualitative analysis questionnaire from the creation of categories (Appendix D1 and D2) [13, 14].

Results

First phase:

Students

In relation to the results presented to the students, we noticed that for the improvement of teaching learning in PC, the training of the preceptor was indicated as a higher priority item, reaching 91 responses (40%) out of 237 obtained. Regarding the greatest problem, the lack of training of the preceptor was indicated in 83 responses (35%) as the most relevant item. The other response options were randomly distributed according to the Simple Random Sampling procedure, and far from the absolute numbers reached by the above-mentioned options [7]. There were no answers to the open question "other" - which would make it possible to have a different opinion.

Relationship of the Medical Schools with respective periods, including the absolute and relative number of students, who answered the questions and their respective options indicated as priorities are shown in Table 1.

Table 1

List of Medical Schools with respective student samples and response marked as highest priority item containing the absolute and relative numbers of these students

Questions	Medical Schools with respective student samples for periods and responses considered as a priority in absolute and relative numbers						
	UNIFESO		UFF		UFT	UFV	
	6° T** (64)	IS*** (21)	7° T (28)	8° T (47)	IS (24)	IS (32)	7° T (21)
Improvement T/L****	Capac. Precep.	Increase pesq.	Capac. precep.				
(n° abs.)%*	(20) 31%	(6) 29%	(8) 29%	(24) 51%	(8) 33%	(15) 47%	(10) 48%
Problem T/L	Lack of disp. precep.	Lack of disp. precep.	Absence capac. precep.				
(n° abs.)%	(25) 16%	(4) 19%	(11) 39%	(15) 32%	(8) 33%	(10) 31%	(10) 48%
* Absolute number in parentheses and the respective percentage							
** T- Term							
*** IS- Internship							
**** T/L-Teaching and Learning							

Teachers

Study of preceptors' perception revealed several tensions in PC, from the lack of identity of this preceptor with the specialty of Family Health or with the PC itself, to the criticism of the inadequate planning of the activities performed; as well as the excess of students inserted or the realization of mass consultations. Besides, these professionals pointed out the lack of continuous and continuing education activities as conditions for the improvement of teaching learning in PC.

Table 2 shows the main categories created from the speech presented by the preceptors of the 3 Medical Schools considered: UNIFESO, UFF and UFT to the question chosen for this study. The UFV did not participate in the research related to the preceptors.

Table 2

Categories formed from the speech presented by the preceptors of UNIFESO, UFF and UFT

Categories formed from the speech presented by the preceptors of UNIFESO, UFF and UFT	
Specifically in relation to teaching and learning in primary care or in Basic Family Health Units (BHFU) as you, review it? What would you suggest to improve teaching learning in these scenarios?	
Categories	Speech presented by preceptors of UNIFESO
Community Projects Learning is teaching Planning Qualification of the preceptor Permanent education and continued	"Having contact with the community is very important for learning" "The inmates learn a lot by teaching the younger ones" "Smaller numbers of students" "The large number of students and the population to be served limits the time that can be spent at all" "Integrate the academy and the City Hall to enable a better practice" "Bringing the academy closer to the scenarios" "I try to help in the themes and in the proposed schedule" "Support is needed with specialists advising us in the Units" "We need continuing education activities as well as continuing education"
Categories	Speech presented by preceptors of UFF
To learn is to do Qualification of the preceptor Planning Updating the preceptor Emergency reopening Early insertion Active learning methods	"The best way to learn is to do living all the senses" "They should take advantage of the knowledge of the specialists in the Units to go beyond ethics to the doctor-patient relationship and technical knowledge" "The teachers are specialists and they do specialty activities at HUAP* and do not want to go to HBU**, because they do not want to leave the hospital environment, the university should compete with teachers with this profile to work directly at the BHFU ..." "Supervision should be more active" "The preceptory should be performed with professionals involved in the service" "Willingness to act in TCS***" "HBU** needs to be structured to receive students and teachers and to understand what it means to insert the discipline in the unit" "We can not forget about the need and constant effort in reading articles" "Reopening the Emergency in HUAP* would make possible a great experience" "I think precocious insertion, if it was in later stages of graduation would be more productive" "Use of active learning methods"
Categories	Speech presented by preceptors of UFT

Source: Authors Creation
*HUAP - Antônio Pedro University Hospital
**HBU - Health Basic Unit
***TCS - Supervised Field Work

Categories formed from the speech presented by the preceptors of UNIFESO, UFF and UFT	
Qualification of the preceptor	"It must have specialized academic training with specialized didactic material"
Planning	"HBU** extrapolates the number of people assisted and there is no time to discuss cases"
Community Projects	"It should improve the counter reference for the discussion of diagnoses"
	"We have a deficit of discussion time"
	"Decrease local demand"
	"There should be standardization of subjects and application of learning in activities"
	"They need more practice of community interventions"
	"Should have more time available and carry out projects in the community"
Source: Authors Creation	
*HUAP - Antônio Pedro University Hospital	
**HBU - Health Basic Unit	
***TCS - Supervised Field Work	

It is possible to notice from the speeches presented that the categories "planning" and "qualification of the preceptor" were common to the Schools researched and pointed out more frequently in the teachers' discourses.

Second phase:

Workshops (Supplemental Digital Appendix F) were carried out based on clinical topics selected according to the interest of the students and the preceptor of the BHFU and according to their relevance in daily practice with the BHFU such as: Is physical activity beneficial for those who already had Acute Myocardial Infarction (AMI)?

We verified that of all tools available, the Evidence Based Health Portal offered the best research conditions to the tutor and to the students when it made available 12 Databases and the Atheneu library.

Using of the Portal offered 3 databases considered excellent by the students and preceptor as sources of search of information with criteria of Evidence Basead Health (SBE): Dynamed; Pro Quest and BMJ - British Medical Journal - for presenting studies with clinical evidence from (clinical) questions under the use of systematic reviews.

Around 20 workshops were carried out with 2 Groups of 5 Internists - called G1 and G2 - and their respective preceptor of a BHFU of the Secretary of Health of Teresópolis - RJ - during the first semester of 2013.

The synthesis of the list of workshops, themes and their respective considerations are shown in Table 3.

Table 3

List of workshops held with selected themes and their considerations

Selected themes and activities	Considerations
Group G1 Period: 01/2013 to 04/2013	
<p>Weekly workshops with the participation of the preceptor and five interns. Pre and post-test application with the Likert scale. Themes: Is prophylactic use of acetylsalicylic acid (Aspirin®) beneficial to heart disease patients? Is prophylactic use of Aspirin® beneficial to healthy people? Is physical activity beneficial for those who have had *AMI? And who did not? What is the relationship between smoking and cardiovascular disease? Diet and cardiovascular disease? Application of Omega 3 and 6. What real benefits can come from using it? Use of polyvitamins and calcium for treatment of osteoporosis and osteopenia. Applying the post-test.</p>	<p>Excellent reception. The proposal to discuss clinical issues has been accepted. ****MBE and Telehealth discussion. Themes chosen from consensus with the group and the meaning of the same for students and preceptor. Discussion of topics from very practical issues such as a TV show call. Elemental questions that include broader questions. Full use of the Portal and its databases in addition to the **BVS. Discussion on systematic reviews. Construction of a flowchart to access the databases.</p>
Group G2 Period: 04/13 to 07/13	
<p>Weekly workshops with the participation of the preceptor and five interns Application of the Pretest with the Likert scale. Themes: The use of Zinc. What benefits can they bring to health? The use of Zinc in childhood, youth and adult life. Are there differences? Use of pumpkin seeds, phytotherapy and some applications of folk medicine, complementary or alternative in the treatment of common complaints in PC. Phytotherapy Vertigo: What is it? Etiology and its diagnosis. How do you treat it? Efficacy and indications of cinnarizine (anti-dizziness) and Ginkgo biloba (herbal medicine used as anti-dizziness)? Application of Posttest with the Likert scale</p>	<p>Excellent welcome. Discussion by clinical topics. ****MBE and Telehealth discussion. Themes chosen from consensus with the group and the meaning of the same for students and preceptor. Full use of the Portal and its databases in addition to the **BVS. Use of systematic reviews and the ***SBE Portal. ***SBE is expanded to have 12 databases.</p>
Source: Authors Creation	
*AMI: Acute Myocardial Infarction	
**BVS: Virtual Health Library	
***SBE: Evidence Basead Health	
****MBE: Evidence Based Medicine	

Finally, after the Workshops, we verified the following results in relation to pre and post-acquired knowledge of the Portal: 67% (40/60) points expressed for the preceptor in the pre-application of the

research and 92% (55/60) achieved after the application of this tool, and also 62% (220/325) and 76% (247/325) respectively in the pre-application for the G1 and G2 groups of internal, as well as 92% (300/325) and 84% (272/325) for the post-application of the G1 and G2 groups, respectively. These results may signal a greater knowledge gain, as the higher the score obtained in the post-test, the greater the possibility of increasing knowledge (Table 4).

Table 4

Application of questionnaires using Likert scale with Internists (10 students) and respective preceptor with score analysis of 1 to 5 for each question

Questions	PRE 10 Internists (G1 + G2) and preceptor (Prec.)			POST 10 Internists (G1 + G2) and preceptor (Prec.)		
	Prec.	G1	G2	Prec.	G1	G2
1) Teaching and learning in Primary Care leave to be desired	4	24	17	5	25	16
2) I have knowledge of search portals	4	12	17	5	22	21
3) I have knowledge of the resources of Telemedicine and Telehealth	4	8	8	4	24	19
4) I have knowledge of digital libraries	5	16	21	5	24	23
5) My training with Internet tools such as research sites, digital libraries and Telemedicine and Telehealth is important	5	20	23	5	23	25
6) My training with Internet tools such as research sites, digital libraries and Telemedicine and Telehealth is more important than the use of printed books and that the use of the library of the Institution	3	13	10	4	11	21
7) I have knowledge about evidence-based medicine	1	12	18	4	23	24
8) Apply Evidence Based Medicine in Basic Care	2	17	20	4	24	22
9) Apply Evidence Based Medicine in the other practice scenarios (*) * preceptor only works at BHFU	-	17	20	-	23	21
10) Application of Evidence Based Medicine can improve my knowledge	5	20	25	5	25	25
11) Application of Evidence Based Medicine can improve my performance in Primary Care	5	22	25	5	24	25
12) My teachers or preceptors (**) have knowledge about Evidence Based Medicine ** for the preceptor = students	1	20	19	4	20	20
13) I discuss with my teachers or preceptors (**) medical practice based on evidence-based medicine. ** for the preceptor = student	1	15	16	5	24	22
Total possible (absolut number)	60	325	325	60	325	325
Source: Authors criation						

Questions	PRE			POST		
	10 Internists (G1 + G2) and preceptor (Prec.)			10 Internists (G1 + G2) and preceptor (Prec.)		
Total presented (absolut number)	40	220	247	55	300	272
Total (relative number)	67%	68%	76%	92%	92%	84%
Source: Authors criation						

Regarding the open question: about the perception about the application of Internet tools one can verify the following categories created: "knowledge expansion"; "Applicability in practice"; "Rapidity of information" and "updating", there being no distinctions in the speeches of the students of Groups G1 and G2 in both the pre-application and the post-application of the research. In relation to the preceptor this one expressed a category like those offered by the inmates, in this case the "acquisition of knowledge".

In the next step, we verified the studies on this subject in the Virtual Health Library (BVS). Important to pointed out this Library is chosen for its recognized dimension and academic representation in the scenario of teaching in the Brazilian health area, being present by the BVS Network in 30 countries of the Americas, the Caribbean, Africa and Europe, as well as presenting a quality criterion guaranteed by the Certification Seal provided by BIREME/OPAS/OMS.

For research, we used 3 fundamental terms: "preceptory"; "training" and "basic care". The term "tutoring" was also used instead of "preceptory", terms already classified in the descriptors in health. The overall result presented here was about 175 documents, including 171 articles and 2 thesis. We chose to "filter" this research using as main subject "tutoring" which resulted in 90 documents and later added "complete text" which finalized 24 national or international documents (23 articles and 1 thesis). To better analyze these results, we summarized some of these studies on Table 5.

Table 5

List of selected references with title, study modality and respective theme from the BVS research using the terms preceptory and basic care:

REFERENCES	
Title and type of study	-Object of study with intervention proposal-
Ensino e Aprendizagem em Serviços de Atenção Básica do *SUS: desafios da formação médica com a perspectiva da integralidade. "Narrativas e Tessituras" PhD Thesis (Albuquerque, 2007)	Focus on teaching and learning and evaluation in *SUS basic services with analysis of their obstacles and potentialities for the transformation of training and assistance in the perspective of completeness with reference to the **DCNs. It proposes that new care projects for care and training be built collectively.
Improving education in primary care: development of an online curriculum using the blended learning model. Article (Lewin, 2009)	Effectiveness of using mixed learning curriculum at Case Western Reserve University School of Medicine in Cleveland, Ohio using modules available on the web.
A preceptoria na rede básica da Secretaria Municipal de Saúde do Rio de Janeiro: opinião dos profissionais de Saúde Article (Trajman et al, 2009)	Opinions evaluations of 351 health professionals from PC of the ***SMS from Rio de Janeiro on the preceptory activity. It was verified that there is little appreciation and stimulation to the preceptory actions justified by the working and teaching conditions as well as by the improvement of the salaries, the infrastructure and the opportunity of professional qualification. The**** IES and the State are responsible for carrying out effective partnerships to mitigate this situation.
Estrategia de superación para perfeccionar la labor del tutor em los estudiantes de Medicina de la Filial de Ciencias Médicas de Morón. Article (Alonso, 2010)	Study finds that the training of tutors is still insufficient for the general practitioner at the School of Medical Sciences of Moron in Cuba. It proposes a coping strategy to improve the work of the tutor considering three components: Overcoming, teaching assistential work and methodological work.

*SUS: Brasilien's Unified Health System

**DCNs: National Curricular Guidelines

***SMS: Health Departament of Rio de Janeiro

****IES: Higher Education Institutions

REFERENCES	
Becoming a super preceptor: a practical guide to preceptorship in today's clinical climate. Artigo (Barker et al, 2010)	It suggests ways to apply realistic techniques to ensure that the preceptory is successful.
Competencias docentes del Médico de Familia em el desempeño de la tutoría em la carrera de Medicina Article (Sotolongo et al, 2005)	It verifies the absence of a system of selection and training of tutors. Moreover, the authors criticizes the lack of suitability of scenarios for teaching due to material difficulties. It was observed that the inadequate teaching-service relationship results in improvisation and lack of teacher motivation. It proposes the exercise of skills that can favor a higher quality pedagogical management for family doctors who act as tutors.
*SUS: Brasilien's Unified Health System	
**DCNs: National Curricular Guidelines	
***SMS: Health Departament of Rio de Janeiro	
****IES: Higher Education Institutions	

Discussion

In view of the results, we noticed that the qualification of the preceptor seems to be the common aspect in the eyes of both the teachers and the students. Thereby, strategies that can improve the qualification of this professional should be analyzed as already pointed out by Demarzo (2011) [20].

Our findings show a great diversity of perceptions, impressions and approaches for the (ideal) training of the exercise of the preceptory in the area of health and more specifically in the scenarios of practice of the PC or the BHFU used by the Medical Schools. In this regard, Bollela et al (2010), in his book "Internato Baseado em Competências", p. 6, say that competencies are based on 4 essential aspects that must be exercised throughout the exercise and practice of preceptory as follow [21]:

Cognitive function

acquisition and use of knowledge to solve real-life problems;

Integrative function

use of biometric and psychosocial data to elaborate the clinical reasoning;

Relationship function

effective communication with patients, family and members of the health team;

Affective and moral function

availability, patience, tolerance, respect and ability to use these attributes in a judicious and human way.

Priority was given in this study to "cognitive function" or more specifically to the "knowledge acquisition" condition that the preceptor in PC could potentially present and/or perfect with undergraduates under supervision.

The proposal of using electronic portals is in consistency with the prioritization of cognitive function, the use of the electronic portal "Evidence Based Health" - SBE, of the Ministry of Health - MS - prepared in partnership with the Coordination for the Improvement of Higher Education Personnel and Ministry of Education and Culture -Capes/MEC-, which allowed the search in twelve databases in the area of health in addition to a digital library with several scientific publications. This portal allowed free access and training for the potential of 370.000 physicians and 1.200.000 health professionals, according to the Federal Medical Council (SBE, 2012, CFM, 2013). Currently MBE plays a key role in clinical decision-making in various medical specialties [11, 12]. It was also used the Portal of the digital library "evolution" of the Eselvier Publishing House as well as the portal of the Virtual Health Library - BVS that included systematic reviews of Cochrane and the US National Library of Medicine - National Institutes of Health - PubMed. Finally, the resources of Telemedicine and Telehealth were used and analyzed in the areas of collaborative research, tele-education and teleassistance of the National Telehealth Project of the Ministry of Health, such as teleconference classes and distance learning courses.

In brief, it is possible that teaching/learning in the BFHU can show a significant improvement in relation to cognitive aspects such as discussion of clinical issues, when using Internet resources, such as eletronic portals, virtual and digital libraries, in adittion the use of Telemedicine and Telehealth.

Practising of these resources should be associated with greater dissemination in academic circles. Currently, the Ministry of Health has started offering free access to SBE Portal for undergraduates of medical schools and professionals under their respective councils. Then, only those who do not have availability of the internet and/or computers or who have not been raised and oriented to the use of these tools, or simply, who do not want to do so, would not have access and study. Hence, the key question is still: How can we raise the interest of those students who have access to the Internet to use these resources?

We observed that the number of other problems pointed out in the insertion of this student in the BHFU practice scenario related to the proper teaching-work process already disfavored the possibility of this one to perform a good or even some contact with these electronic tools. In addition, we perceived the quality of the preceptor could also suffer from these aspects, which seems to reflect almost in unison by the students. Thus, we can assume that the biggest problem is centered on the training of the preceptor, who would also be hampered by the multiple roles and responsibilities. We also noticed that there would be hardly any preceptors as pointed out in the references of this study: preceptors who would be able to present all the functions - cognitive; affective-emotional and psychomotor-ideally well developed.

Conclusion

Although, we do not have a model for the ideal training of the preceptor that acts in PC, we can suggest the use of a tool, the Portal SBE, which shows to be interesting for the preceptor cognitive function as well as can facilitate and greatly assist this professional in his daily task at the UBSF. We emphasize the need of interaction, between doctors and students as well as health professionals that could become a useful approach to improve PC. In this way, we will be contributing to its training and probably helping it to bring medical students and graduates of medical schools closer to the good practice, especially clinical, in AB, a scenario that is indispensable for the Brazilian population, but above all, worldwide.

Declarations

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Competing Interests: None reported.

Authors Contributions: JRBC – constructed and applied the questionnaires and interviews, constructed tables and wrote the paper; LAA – conceived the study and help to analyze data; AVPA – analyzed data and help with the writing of the manuscript; CAMS – conceived the study, help to interpret data and help with to writing the paper.

Ethical approval: Approval for this Project was obtained from Research Ethics Committee of University Center Serra dos Órgãos (UNIFESO) and Oswaldo Cruz Foundation (FIOCRUZ), under no. 457/10 in July 2010 and under number 506/11 of November 2011. After the approval, the questionnaires were applied, and their respective results were anylise (see Supplemental Digital Appendix B). We emphasize that this research is in line with resolution 466/12 (Resolution 466/12, 2013). The respective Terms of Free and Informed Consent (TCLE) can be found in Appendices A1 and A2.

Consent for publication: Not applicable

Availability of data and materials:

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

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