

## EDUCATION

# The Development of Cognitive and Affective Skills Through a Sexual and Reproductive Health Medical Education Unit



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## ABSTRACT

**Introduction:** Although better medical training on sexual and reproductive health (SRH) is an unquestionable global need, and recent research has emphasized the importance of SRH education, few studies have presented alternative teaching models to conventional approaches.

**Aim:** To examine the structure and evaluation of a curricular unit that uses an active teaching and learning strategy, and to evaluate both the cognitive and affective student learning outcomes.

**Methods:** This study used retrospective and cross-sectional analyses of a curricular unit with 8 weekly lessons structured into individual activities before the class, group activities monitored in class, feedback, and the development of medical empathy.

**Main Outcome Measure:** Student performance was evaluated through summative and formative activities. The process was evaluated quantitatively by a questionnaire containing Likert-type and open-ended questions with speech analysis and with categorical evaluation.

**Results:** The final average of the analyzed group was  $7.95 \pm 0.5$  on a scale of 10. Likert-type assessment (Cronbach's  $\alpha = 0.86$ ) revealed strong student adherence and, through responses to open-ended questions, positive evaluations of the proposed SRH teaching model. The Jefferson Scale of Physician Empathy showed a high index of self-reported general empathy ( $117.3 \pm 11$ ), with a significantly higher index for female students ( $P = .019$ ) than male students; however, this gender difference disappeared after the intervention ( $P = .086$ ).

**Conclusions:** The curriculum model was developed and continuously adjusted based on grounded theory for teaching SRH and included both cognitive and affective stimuli; the results showed favorable student evaluation of the unit, and it proved feasible to implement in the time available. **de Oliveira R, Montagna E, Zaia V, et al. The Development of Cognitive and Affective Skills Through a Sexual and Reproductive Health Medical Education Unit. Sex Med 2019;7:326–336.**

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**Key Words:** Empathy; Graduate Education in Medicine; Population Genetics; Sexual and Reproductive Health

## INTRODUCTION

The teaching of sexual and reproductive health (SRH) in medical education, despite wide recognition of its necessity, is a global challenge and there is little clarity in the research on how to implement it.<sup>1,2</sup> This situation exacerbates the fact that the time available for teaching content and skills in SRH in medical

education continues to decrease, notwithstanding the problems faced by patients in this area throughout their lives.<sup>3</sup>

The poor quality of the training of health care professionals in this area is concerning. Considering the topic of fertility treatments, for example, trainees from different medical areas in the United States also have knowledge limitations,<sup>4</sup> which could have repercussions concerning patients' options for preserving fertility or for adequately assessing the risks of a late pregnancy. At the same time, the neglect of men's SRH topics during medical training also creates gaps in this process.<sup>5</sup>

In addition to issues such as discrimination and heterosexism against lesbian, gay, bisexual, transvestite, transsexual, and transgender individuals in medical training<sup>6,7</sup>, developing early awareness of sexual violence is paramount. This complex subject

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extrapolates cognitive learning on how to treat physical harm as it addresses the potentially long-term consequences on sexual, reproductive, and mental health for victims and their families and communities.<sup>8</sup> Likewise, discussions on family planning should extend to affective issues such as the medical and social impact of unwanted pregnancies.<sup>9</sup>

The literature has offered several recommendations on competencies yet to be explored in SRH teaching.<sup>9</sup> However, teaching in-depth content on a wide array of topics, coupled with the time required to do so, is no easy task for teachers.

To overcome the abovementioned challenges, the Sexual, Reproductive, and Population Genetic Discipline was developed, a curricular unit of the Faculty of Medicine of ABC, involving all students at the beginning of the medical education course and following the recommendations of the guidelines from the 2012 Summit on Medical School Education in Sexual Health. It includes the use of varied teaching methods such as the combination of a didactic model, problem-based learning, systems-based learning, and online course delivery to encourage medical educators to create curricula or adopt those developed by others tailored to the school's overall curricular design to foster collaboration among students and teachers and evaluate the efficacy of the curriculum.<sup>10</sup>

The curriculum unit includes multiple teaching and learning strategies (MTLS) to teach students about the topics of infertility, sexual violence, legal abortion, comorbidities associated with the reproductive system and sexual health, pharmacogenetics, genetic diseases in human reproduction, family planning and ethical values, according to other programs already described.<sup>11–23</sup> Most of these topics address both intimate individual and family issues and use teaching and learning practices that explore the development of physician empathy (PE) as a curriculum strategy.<sup>24</sup> The activities in PE, still underdeveloped in medical education,<sup>25</sup> have been incorporated into this curriculum unit. Divided into cognitive and affective aspects,<sup>26</sup> they are justified by the need for medical competence to extend beyond the intellectual process, requiring the development of empathic abilities.<sup>27</sup>

This didactic strategy uses previous individual studies, lectures, group study in the classroom, feedback, and matrix cases. Also included in the unit are analyses of medical residency tests and activities aimed at PE development.

The development and continuous adjustment of the curriculum was guided by grounded theory,<sup>28</sup> which establishes as a work strategy a continuous evaluation between analysis and data collection, aimed at obtaining gradual approximations of the subject investigated. The procedures advocated by grounded theory include iterative processes, systematic treatment of data through coding, constant comparisons, and theoretical sampling of the thesis.<sup>29</sup> It is, therefore, an appropriate theoretical framework for curriculum development.

The aim of this study was to present the structure and evaluation of a discipline using an active teaching and learning

strategy, considering the cognitive and affective domains in a curricular unit on sexual and reproductive health. Viability was assessed by questionnaires containing both open-ended and Likert-type questions. It was hypothesized that the participants would satisfactorily adhere to these strategies and demonstrate adequate insight into the themes to broaden their knowledge and adopt more open attitudes toward sexual and reproductive health.

## METHODS

### Structure of the Discipline

The course consisted of 8 modules totaling 28 hours, distributed in 8 weekly sessions of 3.5 hours each. With some adjustments to each edition (as dictated by grounded theory), the discipline was applied to 8 classes of 30 third-year students and 2 classes of 60 second-year students, in the years 2015 and 2016. The activities are summarized in [Figure 1](#).

The students received an academic manual with theoretical texts on SRH, clinical cases, and conceptual framework, in which 1 page presents essential concepts of each theme as support material. The manual also contains various learning tasks (described below), non-graded assignments characterized by images and questions about the course topics that are available on the Internet in short videos ( $5 \pm 2$  minutes) created and developed by the team of teachers.

### Cognitive Skills: Case-Based Learning

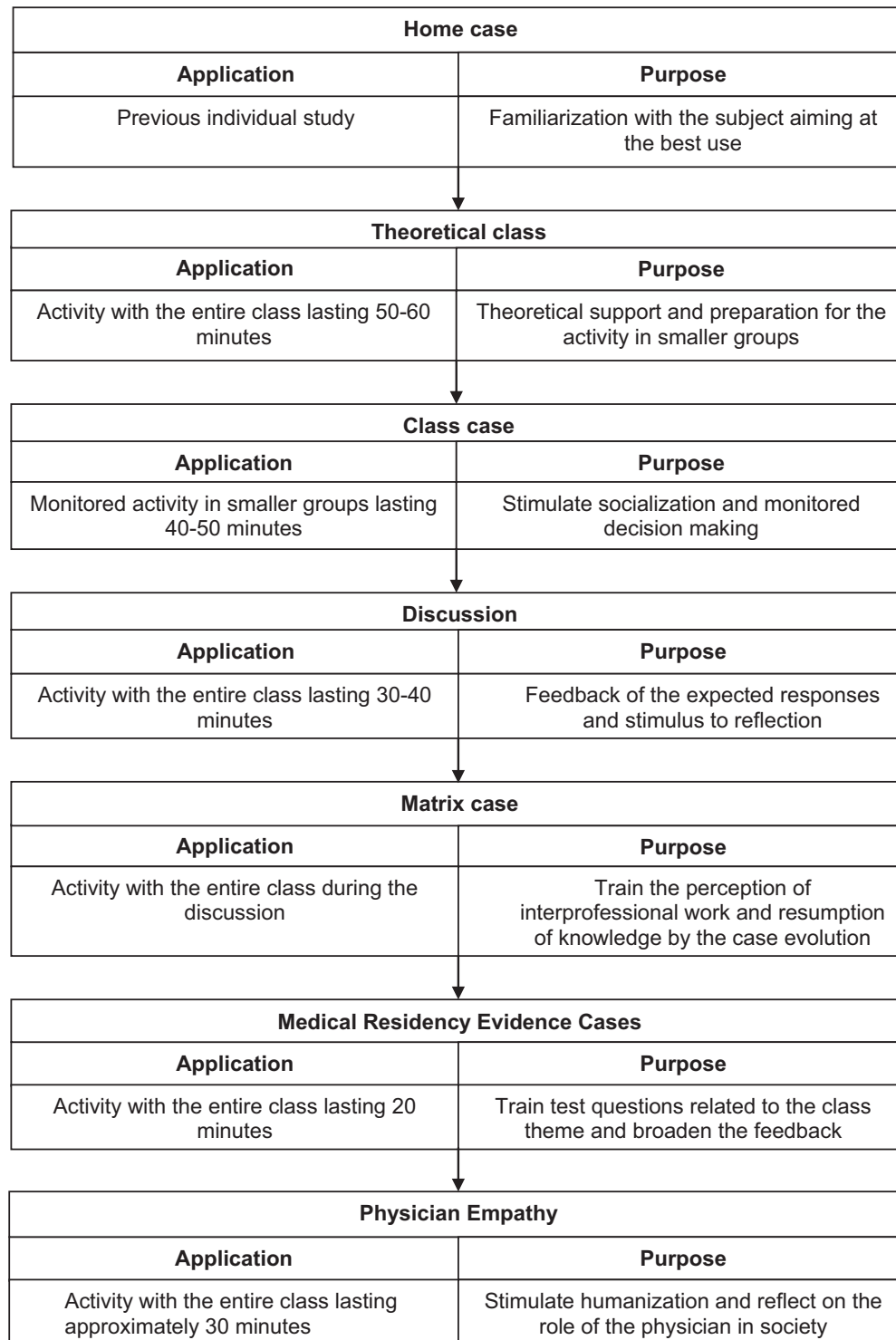
The development of cognitive skills was anchored in the questions about the realistic cases. The aim was to promote self-directed learning, clinical reasoning, and decision-making skills, and deepen conceptual understanding.<sup>30</sup> The main resources for the development of cognitive skills consisted of denominated home cases, class cases, matrix cases, and medical residency evidence cases, which are described below.

### Home Cases

This was an individual activity to be completed outside class. The description of a clinical case was presented, with questions to be answered; this activity represented 34% of the final grade. The objective was to acquire the conceptual repertoire necessary to improve both understanding of the lecture contents and the quality of the group discussions, called *class cases*. The aim was to convey to the student the usefulness and importance of the new information.<sup>31</sup> An example of a home case is presented in the [Appendix](#).

### Class Cases

This activity involved small group discussions of clinical cases presented and discussed in the classroom. Scaffolding for the solution of cases was provided by free access to electronic devices and the professors' guidance. In each class, there was a different professor specialist in that field, in addition to the course



**Figure 1.** Description of the activities and model of the classes of the course.

coordinator. This activity accounted for 66% of the final grade. An example of a class case is presented in the [Appendix](#).

### Matrix Cases

This activity involved the discussion of clinical cases presented at the beginning of the course with topics from different classes with the aim of relating them to new cases. The goal was to enable students to experience the same case in different moments

and contexts throughout the unit of study. This was a non-graded assignment. An example of a matrix case is presented in the [Appendix](#).

### Medical Residency Evidence Cases

After receiving feedback, the students were introduced to the provided medical residency evidence case resolution on the addressed topic. The objective was to emphasize its importance

in the context of test questions, in addition to representing another feedback strategy. This was also a non-graded assignment.

### Cognitive and Affective Skills: Feedback and Physician Empathy

Feedback was the central activity of the formative assessment.<sup>32</sup> This final discussion with feedback was aimed at reducing students' anxiety and improving their learning progress.<sup>32</sup> The professors' feedback on the expected answers, the possible ethical reflections arising from the cases examined, and the resolution of medical residency evidence cases were intended to improve both cognitive skills and affective skills, regulate the learning process, and raise motivation and self-esteem.<sup>33</sup>

The teaching of PE occurred in 4 stages. The first stage involved the definition of PE, its importance, and the value of non-verbal language; the second and third stages involved the examination of clinical cases in which students voluntarily read texts simulating consultations with posterior analyses of the cases, and the fourth stage consisted of a brief report of patients' medical history and the importance of the arts in the development of humanized treatment.

### Ethical Approval

This study was approved by the Research Ethics Committee of FMABC (CAAE: 76099417.3.0000.0082, opinion: 2.418.551).

### Main Outcome Measures

**Evaluation.** Evaluation of both the development and application of the described curriculum was implemented using the mixed-methods technique,<sup>34</sup> integrating both quantitative and qualitative approaches.

**Evaluation Instruments.** Retrospective and cross-sectional analyses based on the data collected between the beginning of 2015 and the end of 2016 were used. Student performance on the HC responses was evaluated by summative assessment, whereas summative and formative assessment were used to evaluate their class case performance.<sup>35</sup>

A 20-item Likert-type questionnaire was used to assess the coherence of Cronbach's  $\alpha$  responses to capture the students' perceptions of the course, and an open-ended questionnaire requesting the positive and negative points, besides the suggestions of improvements of the course, was also used.

An open-question questionnaire was used for discourse analysis and categorical evaluation with the recommendations of the consolidated criteria for reporting qualitative research.<sup>36</sup> A discourse analysis of the answers in the qualitative evaluation questionnaires was conducted, as proposed by Bardin.<sup>37</sup> Categorical and word association analyses were carried out without previous definitions of categories of judgment or qualification. All assessments were read, and the indicative terms of student opinion were listed and quantified. Then, the words were

grouped according to their proximity of meaning. Finally, the terms were categorized and separated by relevance to the element of the referred course. Validation was conducted according to Lynn.<sup>38</sup> The creation, merger, separation, and definition of categories occurred through consensus among the evaluators (2 experienced physicians in the field and an education specialist). In the absence of this, they were kept separate.

The student version of the Jefferson's Scale of Physician Empathy (JSPE), specific to the clinical context, is an instrument that predominantly evaluates the cognitive domain of empathy, but it also addresses some affective aspects.<sup>27</sup> The application of the JSPE<sup>24</sup> at the beginning and end of the course occurred for 2 third-year classes.

20 items are to be responded to, with answers varying from 1 to 7. 1 stands for "strongly disagree," whereas 7 stands for strongly agree whenever the respondent has a positive answer and the opposite when a negative answer. Great empathy is represented when the scores are high, such as 140. The subcategories are perspective taking, compassionate care, and walking in patient's shoes.

This inventory consists of 20 items, which are responded on a 7-point Likert scale, with 1 being strongly disagree and 7 being strongly agree for positively responded items and 1 being strongly disagree and 7 being strongly disagree otherwise. Therefore, the scores ranged from 20 till 140. Higher scores indicate greater empathy. It has been categorized into 3 subscales, including perspective taking (10 positively responded items), compassionate care (8 negatively responded items), and walking in patient's shoes (2 negatively responded items).<sup>24</sup> The "compassion" item was evaluated using the Kolmogorov-Smirnov test, indicating a non-parametric measure. The *P* value was obtained using the Mann-Whitney U-test to compare medians.

Participant observation was conducted by a coordinator to mediate the students' work in all activities and to help achieve the objectives proposed in each didactic task and evaluate their progress. The coordinator maintained permanent evaluation of the academic needs of the students, reviewing or developing, together with the teaching staff, teaching strategies essential to the improvement of the course.

**Assessment of Student Performance.** The final average for approval was 7 on a scale of 10, with 34% of the final grade based on student performance in home cases and 66% on performance in classroom cases.

## RESULTS

### Student Performance

Table 1 shows the overall average of the 360 pupils in relation to home cases and class cases. The data demonstrate a satisfactory yield. The final average was  $7.95 \pm 0.5$ . Of all students, 22 (6%) were requested to take a final test, with no student failing either the test or the discipline.

**Table 1.** Description of the final averages of the summative assessments of the course

Activities	2015						2016														
	3A		3B		3C		3D		3A		3B		3C		3D		2A		2B		
	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	Average (SD±)	
Home case	4.6 (0.5)	4.5 (0.5)	4.4 (0.3)	3.6 (0.6)	4.1 (0.4)	4.1 (0.4)	4.1 (0.4)	4.1 (0.4)	4.1 (0.4)	4.1 (0.4)	4.1 (0.4)	4.1 (0.4)	4.1 (0.4)	4.1 (0.4)	4.1 (0.4)	4.1 (0.4)	4.1 (0.4)	4.5 (0.4)	4.5 (0.4)	4.5 (0.4)	4.5 (0.4)
Class case	8.5 (0.8)	7.9 (1.8)	8.4 (0.6)	8.3 (0.5)	8.1 (1.2)	8.1 (1.2)	8.1 (1.2)	8.1 (1.2)	8.1 (1.2)	8.1 (1.2)	8.1 (1.2)	8.1 (1.2)	8.1 (1.2)	8.1 (1.2)	8.1 (1.2)	8.1 (1.2)	8.1 (1.2)	8.6 (1.2)	8.6 (1.2)	8.6 (1.2)	8.6 (1.2)
Final average	8.5 (0.8)	8.0 (1.4)	7.6 (0.5)	7.8 (0.8)	8.5 (0.9)	8.5 (0.9)	8.5 (0.9)	8.5 (0.9)	8.5 (0.9)	8.5 (0.9)	8.5 (0.9)	8.5 (0.9)	8.5 (0.9)	8.5 (0.9)	8.5 (0.9)	8.5 (0.9)	8.5 (0.9)	7.5 (1.6)	7.5 (1.6)	7.5 (1.6)	7.5 (1.6)

Note: "3" or "2" refers to the third or second year of medical graduation. The letters refer to groups. Four classes of 30 third-year students "A", "B", "C", "D" and two classes of 60 second-year students "A" and "B" were evaluated.

## Student Course Evaluation

The results of the 121 responses are presented in Table 2. The questionnaires displayed internal coherence, with a Cronbach's  $\alpha = 0.86$ . As the results in Table 2 show, the evaluation was quite favorable in all aspects of the survey, and the fact that the methodology was approved by 93.3% of respondents should be highlighted, which was confirmed by high percentages in related questionnaire items (10, 11, 15, and 16). In addition, the activities of the course were considered pleasant by 94.2% of the students, and the group activities were approved by more than 85%. Therefore, the overall results reveal a clear acceptance and appreciation of the active teaching and learning methodology that was adopted.

## Categorical Analysis and Association of Words in the Questionnaire with Open-Ended Questions

Table 3 shows the results of the open assessment requested for 7 third-year classes and 1 second-year class, which totaled 270 students. A total of 173 (64.1%) students answered the questionnaires, generating 866 terms (an average of 5 terms per student), grouped into 72 categories of course evaluations. Each category presented  $\geq 20$  related terms. The choice of the first 19 categories considered the criterion of representing  $>90\%$  of all terms, totaling 795 (91.8%). The 10 most-mentioned categories comprised 587 (67.8%) terms. It is noteworthy that all terms possessed positive connotations.

## Jefferson Scale of Physician Empathy-Medical Student Version (JSPE)

Table 4 describes the results of the JSPE,<sup>24</sup> highlighting an initial general empathy with a high average (117.3). However, there was a statistically significant difference related to sex in the evaluation ( $P = .019$ ). The final evaluation revealed a high average grade (114.7) for general empathy, but with no statistically significant difference between sexes ( $P = .086$ ). The students' absences in the final evaluation resulted in a low value of  $n = 10$  and may have interfered with the obtained result.

## DISCUSSION

The course presents an innovative methodologic approach, with few previous reports on the systematic and structured use of similar strategies. Thus, the experiences described with several strategies require internal validation, considering that the comparisons were vulnerable and limited.

In this context, the students' evaluation of MTLs was used, through analyses of the systematized manifestations, associated with their satisfactory performances, inferred by the final average of  $7.95 \pm 0.5$ , as a form to verify the accomplishment of 1 of the objectives of this work.

The students' adherence to the course was estimated by the consistency between items of the 2 evaluation instruments, supplemented by participant observation, which indicated the

**Table 2.** Result of the Likert questionnaire of course evaluation (total n = 121)\*

Questions	SD <sup>†</sup> n (%)	D <sup>†</sup> n (%)	I <sup>†</sup> n (%)<	A <sup>†</sup> n (%)	SA <sup>†</sup> n (%)	NA <sup>†</sup> n (%)
1. The content was superficially approached	50 (41.3)	60 (49.6)	4 (3.3)	6 (5)	1 (0.8)	0
2. The course material was well prepared	0	2 (1.7)	2 (1.7)	39 (32.2)	78 (64.5)	0
3. The discipline met my expectations	0	5 (4.1)	2 (1.7)	52 (43)	62 (51.2)	0
4. The discipline has achieved its objectives	0	2 (1.7)	2 (1.7)	49 (40.5)	68 (56.2)	0
5. The methodology adopted was adequate	1 (0.8)	3 (2.5)	4 (3.3)	39 (32.2)	74 (61.2)	0
6. The objectives of the discipline were clear	3 (2.5)	5 (4.1)	5 (4.1)	50 (41.3)	58 (47.9)	0
7. I did not learn much from this discipline	58 (47.9)	49 (40.5)	2 (1.7)	5 (4.1)	5 (4.1)	2 (1.7)
8. I was not interested in any subject approached	79 (65.3)	37 (30.6)	2 (1.7)	2 (1.7)	1 (0.8)	0
9. I wish I had studied a greater variety of subjects	16 (13.2)	33 (27.3)	46 (38)	19 (15.7)	6 (5)	1 (0.8)
10. The way of conducting the works facilitated the learning	0	1 (0.8)	6 (5)	52 (43)	62 (51.2)	0
11. I felt motivated to work on this methodology	0	8 (6.6)	14 (11.6)	45 (37.2)	53 (43.8)	1 (0.8)
12. The fact of doing group activities was a waste of time	67 (55.4)	38 (31.4)	10 (8.3)	6 (5)	0	0
13. The subjects approached were well-chosen	0	2 (1.7)	4 (3.3)	51 (42.1)	63 (52.1)	1 (0.8)
14. The depth level of the discipline was beyond expectations	5 (4.1)	18 (14.9)	39 (32.2)	33 (27.3)	26 (21.5)	0
15. The work performed during the discipline was pleasant	0	1 (0.8)	4 (3.3)	67 (55.4)	47 (38.8)	2 (1.7)
16. The discipline would have been better if there were only lectures	60 (49.6)	41 (33.9)	15 (12.4)	5 (4.1)	0	0
17. Working in a group was important for the learning of all	0	2 (1.7)	13 (10.7)	52 (43)	54 (44.6)	0
18. This discipline has significantly expanded my knowledge	1 (0.8)	2 (1.7)	4 (3.3)	61 (50.4)	53 (43.8)	0
19. I would not recommend this discipline to a colleague	102 (84.3)	16 (13.2)	0	2 (1.7)	1 (0.8)	0
20. This discipline did not make any difference to my graduation	102 (84.3)	16 (13.2)	1 (0.8)	1 (0.8)	1 (0.8)	0

\*Likert-type questionnaire applied from 2016.

<sup>†</sup>Strongly disagree, disagree, indifferent, agree, strongly agree, and not answered.

constant involvement of students in the unit activities. The data that emerged from this process allowed us to estimate the global predominance of positive valuations.

Items 3, 7, and 18–20 of the Likert-type questionnaire were related to the "positive perception" category of the open questionnaire. Items 1, 9, 13, and 14 were related to the "approve the choice of content" category and, item 2 to the "approve the academic manual" category, an instrument that facilitates access to the course contents and their development. Furthermore, items 4, 5, 6, 10, 12, and 15–17 were related to the categories approving the methodology, didactics, dynamics, and organization of the curriculum unit. This part included feedback, implicit in the categories that approve discussions and MREC, as well as the resumption of knowledge in matrix cases.

There were restricted manifestations of discomfort in relation to the group work (items 12 and 17 of the Likert-type questionnaire), suggesting a view of some students as passive information receivers and not as active participants in the learning process. However, the predominance of positive evaluations,

such as items 8 and 11 of the Likert-type questionnaire, in addition to the categories "feel motivated," "stimulated for participation," and "interesting classes" corroborated the role of socialization in active strategies.

It is emphasized that grouping items by blocks is arbitrary, because some could belong to  $\geq 1$  category. However, this fact was not considered a limitation, because the coherence of the interpretation was preserved due to the similarity among several items.

The presence of a professor with a specialization in the target subject allowed the amplification of the problematization spectrum, a fact that justified the "qualified professors" category and contributed to learning improvement.<sup>39</sup> Although values construction was not estimated, the feedback was also a resource adopted for the improvement of ethical reflections, as well as the PE activities.

Despite the assessment of PE by JSPE as being predominantly cognitive, some affective elements were also evaluated. The absence of significant differences between sexes concerning

**Table 3.** Categorization of the written students' assessments about the course

Categories	Classes								Total
	2015		2016						
	3A n (%)	3D n (%)	3A n (%)	3B n (%)	3C n (%)	3D n (%)	2A n (%)	2B n (%)	
1. Approve home cases	8 (8.3)	18 (18.8)	20 (20.8)	4 (4.2)	17 (17.7)	4 (4.2)	16 (16.7)	9 (9.3)	96
2. Approve the methodology	8 (10.4)	9 (11.7)	12 (15.6)	5 (6.5)	13 (16.9)	4 (5.2)	9 (11.7)	17 (22)	77
3. Positive perception	11 (15.3)	10 (13.9)	13 (18)	4 (5.6)	8 (11.1)	4 (5.6)	7 (9.7)	15 (20.8)	72
4. Feel motivated	10 (16.9)	9 (15.3)	10 (16.9)	1 (1.7)	8 (13.6)	3 (5.1)	8 (13.6)	10 (16.9)	59
5. Qualified professors	7 (12.1)	1 (1.7)	14 (24.1)	3 (5.2)	11 (19)	2 (3.4)	9 (15.5)	11 (19)	58
6. Approve MREC	1 (2)	7 (13.7)	10 (19.6)	2 (3.9)	8 (15.6)	1 (2)	11 (21.6)	11 (21.6)	51
7. Approve the didactics	5 (10.9)	3 (6.5)	4 (8.7)	4 (8.7)	9 (19.6)	1 (2.2)	10 (21.7)	10 (21.7)	46
8. Approve the content choice	4 (8.9)	5 (11.1)	4 (8.9)	3 (6.7)	6 (13.3)	3 (6.7)	12 (26.6)	8 (17.8)	45
9. Approve the dynamics	3 (6.8)	10 (22.7)	5 (11.4)	2 (4.5)	10 (22.7)	3 (6.8)	6 (13.6)	5 (11.4)	44
10. Approve absence of final exam	2 (5.1)	2 (5.1)	9 (23.1)	3 (7.7)	5 (12.8)	2 (5.1)	8 (20.5)	8 (20.5)	39
11. Approve the discussions	3 (10.3)	5 (17.3)	3 (10.3)	0	6 (20.7)	3 (10.3)	6 (20.7)	3 (10.3)	29
12. Little time for activities	0	0	14 (53.9)	3 (11.5)	3 (11.5)	3 (11.5)	0	3 (11.5)	26
13. Approve coordinator professor	0	5 (20.8)	6 (25)	0	4 (16.7)	4 (16.7)	0	5 (20.8)	24
14. Stimulated for participation	6 (26.1)	4 (17.4)	4 (17.4)	0	3 (13.1)	1 (4.3)	0	5 (21.7)	23
15. Praise the organization	0	0	7 (30.4)	0	8 (34.8)	0	7 (30.4)	1 (4.3)	23
16. Lack of practical classes	0	5 (22.7)	1 (4.5)	1 (4.5)	10 (45.5)	2 (9.1)	0	3 (13.6)	22
17. Interesting classes	3 (14.3)	2 (9.5)	11 (52.3)	0	0	3 (14.3)	0	2 (9.5)	21
18. Approve the course of physician empathy	x	x	1 (5)	3 (15)	2 (10)	2 (10)	5 (25)	7 (35)	20
19. Approve the academic manual	x	x	5 (25)	1 (5)	3 (15)	2 (10)	5 (25)	4 (20)	20
Number of assessments	15 (8.7)	12 (7)	23 (13.3)	10 (5.8)	26 (15)	12 (7)	54 (31.2)	21 (12.1)	173

x = absence of activity in the class.

"3" or "2" refers to the third or second year of medical graduation. The letters refer to groups. 4 classes of third-year students "A," "B," "C," and "D" and 2 classes of second-year students "A" and "B."

general empathy at the end of the course also suggests the positive effects of PE practice. The cause of the initial superior female performance is likely related to cultural and evolutionary aspects, such as caring play, especially in the preverbal phase of childhood development.<sup>40</sup>

There was still a lack of preparation of the professionals involved, which resulted in the teaching of only the sexual function of SRH, without predicting the approach of ethical and social aspects.<sup>41</sup> Thus, it is essential for the course to be structured around the teaching contents of SRH, with a focus on the cognitive and affective domains.<sup>42,43</sup>

The coordinating professor (mentioned in the "approve coordinator professor" category) was fundamental to the progress of this course and its activities and contents. This made it possible to motivate the students to reach the goals by several means, and even with the peculiarities of the MTLs, inspiration is justified in SRH.<sup>44</sup> Participant observation indicated that throughout the course and as the students perceived the direct relevance of the information to be apprehended, there was an increase in motivation, collaboration, and, consequently, the likelihood of learning retention.<sup>33</sup> The proposal of an active teaching and learning methodology in a conventional academic culture demanded of the students an active posture, engagement with his/her own learning, greater responsibility for their

performance, and the capacity to organize his/her own time, even for non-graded learning activities.

This opens questions concerning the validity of MTLs for the excess of activities, which would imply the need to reduce the exposed content, in comparison with exclusive theoretical classes. However, this is not the evaluation of the students, because, in item 16, "the discipline would have been better if there were only expositive classes"; the discordance reached 83.5%, suggesting the recognition of the poor effectiveness of that learning strategy. Another aspect analyzed was the absence of a traditional single evaluation at the end of the course, a procedure increasingly questioned as its limitations are beginning to be recognized.<sup>45,46</sup>

The "approve absence of final test" category was justified by the possibility of a single test to promote reductionist and superficial learning,<sup>47</sup> restricting content to some topics, even in large-scale tests, failing both in the desired educational objectives and in the assessment of the relevant qualities of actual performance.<sup>48</sup> It was found that the students tended to postpone their preparation for a test until it was imminent, generating various study behaviors and memorization techniques to get the correct answers, regardless of their understanding of the learning contents, which resulted in poor learning quality.<sup>49</sup>

**Table 4.** Evaluation of the Jefferson Scale of Physician Empathy—version for students

Factors of the Jefferson Scale*	Initial evaluation						Final evaluation						
	General			Male			Female			Male			
	n	Average (SD)	P	n	Average (SD)	P	n	Average (SD)	n	Average (SD)	n	Average (SD)	P
Perspective taking	44	59.9 (6.6)	.239	18	57.6 (7.7)		26	61.5 (5.3)	24	59.8 (7.6)	10	60.4 (6.3)	.929
Compassion	45	49.3 (4.7)	.001	18	46.7 (4.81)		27	51 (3.8)	23	48.8 (6.6)	10	49 (4.1)	.964
Putting yourself in the patient's position <sup>‡</sup>	45	8.1 (3)	.219	18	8.7 (3)		27	7.7 (3)	23	6.5 (3.1)	10	8.4 (2.3)	.813
General empathy	44	117.3 (11)	.019	18	112.9 (11.5)		26	120.3 (9.8)	22	114.7 (9.8)	10	117.8 (11.6)	.086

\*Factors of the Jefferson Scale of Physician Empathy—version for students.

<sup>†</sup>The final number of students was lower than the initial number because of absence on the last day of the course.

<sup>‡</sup>Capacity to put yourself in the patient's position.

Kerdijk et al<sup>49</sup> conducted a randomized and controlled study comparing a cumulative assessment with a single, final test. They concluded that cumulative assessment encourages students to distribute their learning and provides them with more opportunities to study learning content than leaving everything to a final examination.

Traditional methods of evaluation may not identify true levels of student competence or provide sufficient feedback.<sup>50</sup> The gradual change in training culture should thus also modify the evaluations of culture.

Analysis of the written answers to the questionnaire showed that all 19 categories revealed positive student opinions, suggesting the successful adoption of the MTLs model. Among these, the most reported category by students was "approve home cases," contradicting the common sense of students to reject out-of-class activities.

Thus, this study emphasizes the possibility of new approaches to medical education, beyond traditional teaching and learning methods. Concerning final exams, after an extensive load of theoretical classes, exams could be replaced by the incentive to the motivating practices that could increase the study time with stimulus to the cognitive and affective skills.

Some studies report that empathy tends to decrease over the course of a medical education program, but the continual stimulation of PE could avoid such a decrease.<sup>51</sup> Medical education still seeks curricula that cultivate empathy and compassion in students, combining "cognitive" and "affective" skills development.<sup>52</sup> Therefore, the results of the "approve the course of physician empathy" question indicated the feasibility of this model of PE teaching in a context of a course not specific to this, and it may open an amplification perspective of this important practice.

Johnson et al<sup>53</sup> described his experience of an optional course for a group of students interested in SRH who reported, even after 3 months, greater knowledge and openness in their attitudes toward this topic. In addition, most participants believed that it was beneficial to their learning and would recommend the program to their peers. This study demonstrates the feasibility of an elective course for all undergraduate students, irrespective of their affinity with the subject of SRH, during the first half of their course, with promising results and positive academic perception regarding the active teaching and learning methodology. Moreover, we emphasize the need to stimulate both students' cognitive and affective skills throughout this process. Therefore, a practical model based on the recommendations for the teaching of SRH is described.

This study has several limitations. The adequacy of MTLs in relation to the available class time required an effort to coordinate the feedback, limiting its application. Although the "little time for activities" category allowed the interpretation of task overload, the dataset enabled the application of student feedback and reflections on PE. The "lack of practical classes" category suggested students' desires to extend the course.

The partial absence of evaluative data about the course and about the teaching of MS in some classes was due to the previous



lack of elaboration regarding this research. Its emergence occurred over time through experience with MTLs. Another limitation includes the fact that the statistics reported in this study were only descriptive in nature.

In addition, there are no data on learning content retention, which would contribute to the evaluation of the course, due to the limitation in recording performance in a broader way with only 8 modules. It should also be emphasized that there was no unit of measure for teaching. However, an evaluative solution was to use integrated analysis of qualitative data.

In relation to the external validity of the present study's results, the fact that it involved second- and third-year medical students suggests that it is not necessary for students to possess a large amount of previous medical knowledge for successful SRH learning. Thus, this 8-module model could be explored in other places regardless of grade; thus, it could be a solution to the habitual limited time of activities development. If this study inspires others in faculties of medicine to develop an SHR curriculum, even incorporating changes based on the peculiarities of their particular institution, 1 of the goals and the capacity of generalizability of this research would be reached. More important than reproducing this model, however, is to reflect on the necessity of providing improved SHR curricula to medical students. This study presents 1 possible way of doing so.

## CONCLUSION

The course performed in medical graduation with the use of MTLs proved to be an achievable model that encourages the development of cognitive and affective skills, even within limited time, with satisfactory student evaluations. It is hoped, therefore, that it has contributed significantly to improving the training of students who will have to address sexual and reproductive health issues in their future professional practices.

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