SOAP Methodology in General Practice/Family Medicine Teaching in Practical Context

Metodologia SOAP na Formação da Medicina Geral e Familiar em Contexto Prático

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ABSTRACT

Introduction: Medical records in General Practice/Family Medicine are an essential information support on the health status of the patient and a communication document between health professionals. The development of competencies in General Practice/Family Medicine during pre-graduation must include the ability to make adequate medical records in practical context. As of 2012, medicine students at the University of Beira Interior have been performing visits using the Subjective, Objective, Assessment and Plan - SOAP methodology, with a performance evaluation of the visit, with the aim to check on which Subjective, Objective, Assessment and Plan - SOAP aspects students reveal the most difficulties in order to define improvement techniques and to correlate patient grade with tutor evaluation.

Material and Methods: Analysing the evaluation data for the 2015 - 2016 school year at the General Practice/Family Medicine visit carried out by fourth year students in medicine, comparing the averages of each item in the Subjective, Objective, Assessment and Plan - SOAP checklist and the patient evaluation.

Results: In the Subjective, Objective, Assessment and Plan - SOAP, 29.7% of students are on the best grade quartile, 37.1% are on the best competencies quartile and 27.2% on the best patient grade quartile. 'Evolution was verified/noted' received the worst grades in Subjective, 'Record of physical examination focused on the problem of the visit' received the worst grades in Objective, 'Notes of Diagnostic reasoning / differential diagnostic' received de worst grades in Assessment and 'Negotiation of aims to achieve' received the worst grades in Plan. The best tutor evaluation is found in 'communication'.

Discussion: Only one single study evaluated student´s performance under examination during a visit, with similar results to the present one and none addressed the patient's evaluation.

Conclusion: Students revealed a good performance in using the Subjective, Objective, Assessment and Plan - SOAP. The findings represent the beginning of the introduction of the Subjective, Objective, Assessment and Plan - SOAP to the students. This evaluation breaks ground towards better ways to teach the most difficult aspects.

Keywords: Clinical Competence; Curriculum; Education, Medical/methods; Family Practice; Patient Care Planning; Problem-Based Learning; Portugal.

RESUMO

Introdução: Os registos clínicos em Medicina Geral e Familiar são suporte de informação sobre o estado do consulente e forma de comunicação entre profissionais de saúde. O desenvolvimento de competências em Medicina Geral e Familiar em pré-graduação deve incluir a capacidade de efetuar estes registos de forma adequada no contexto da prática clínica. Os estudantes de medicina da Universidade da Beira Interior têm realizado desde 2012 consulta com a metodologia Subjectivo, Objectivo, Avaliação e Plano - SOAP com avaliação de desempenho na consulta pretendendo-se verificar em que aspetos da metodologia Subjectivo, Objectivo, Avaliação e Plano - SOAP os alunos revelam maiores dificuldades para definir técnicas de melhoria e correlacionar a nota do consulente com a avaliação do tutor.

Material e Métodos: Foram analisados os dados de avaliação do ano letivo de 2015-2016 na consulta de Medicina Geral e Familiar realizada por alunos do quarto ano de medicina, comparando as médias de cada item da grelha de avaliação em metodologia Subjectivo, Objectivo, Avaliação e Plano - SOAP e a Avaliação pelo consulente.

Resultados: Na metodologia Subjectivo, Objectivo, Avaliação e Plano - SOAP estão no melhor quartil de nota 29,7% dos alunos, e na valorização de competências 37,1% estando 27,2% no melhor quartil de avaliação pelo consulente. Em Subjectivo, a pior nota verifica-se para 'Foi verificada/anotada a evolução', em Objectivo para 'Há registo de exame físico orientado para o problema da consulta', em Avaliação para 'Há notas de raciocínio diagnóstico / Diagnóstico diferencial' e em Plano para 'Há negociação de objetivos a atingir'. A melhor avaliação pelo tutor regista-se para 'Comunicação'.

Discussão: Só um estudo em Portugal avaliou os resultados da prestação do aluno em exame em consulta, com resultados similares, não havendo publicações quanto à avaliação pelo consulente.

Conclusão: Os alunos revelaram bom desempenho na utilização da metodologia Subjectivo, Objectivo, Avaliação e Plano - SOAP. Os resultados encontrados representam o início do treino na metodologia Subjectivo, Objectivo, Avaliação e Plano - SOAP pelos alunos. Esta avaliação abre pistas sobre como melhor ensinar os aspetos com maiores dificuldades.

Palavras-chave: Aprendizagem Baseada em Problemas; Competência Clínica; Currículo; Educação Médica/métodos; Medicina Geral e Familiar; Planeamento de Assistência ao Doente; Portugal.

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INTRODUCTION

The goals in teaching practice of General Practice/ Family Medicine (GP/FM) must include, among possible others, that the students acquire the necessary knowledge, know-how and attitudes to tackle health issues prevailing within GP/FM and its context of practice, focused on the patient, introducing students to the practical environment of a GP/FM visit, knowing how to record data and exposing the students to the regulations of the Direcção Geral da Saúde (Portuguese Health Authority) applicable to the most common specific pathologies within a GP/FM context.[1]

Teaching GP/FM based on a daily practice, in which the student is exposed to the daily need to achieve goals which were previously set and acknowledged, is a tactic that contrasts with classroom teaching and even computer model based teaching.[2]

Hence, the competencies a fourth year medicine student must acquire are defined as follows:

- Identifying the most frequent signals and symptoms in respiratory, endocrine and digestive and cardiocirculatory systems diseases;
- Describing the main preventive attitudes;
- Describing the clinical methodology for following a low-risk pregnancy and knowing, within the Reproductive Health, how to recognise its applicability in the activities of Family Planning visits...;
- Recognising the type and quality of the notes to take in a GP/FM visit, and performing a visit using the Subjective, Objective, Assessment, Plan Methodology – SOAP (SOAP).[1]

This set is in accordance with the objectivity required for compiling lists for the necessary competencies of specialists in GP/FM as it is known in Portugal, and follows international references[3] and is consistent with the need to verify the most correct records in GP/FM daily practice, verifying the fluency of performance.[4]

The evaluation plan for the Unidade Curricular de Cuidados de Saúde Primários II (Curricular Unit for Primary Health Care II) of the fourth year in Medicine of the Faculty of Health Sciences in the University of Beira Interior (FCS-UBI) also includes, as of the school year 2015 - 2016, an evaluation by the patient who consults a student, always under supervision of his/her tutor. The patient is chosen by the tutor among those registered for a visit in each day. Patient evaluation of the visit accounts for 5% of the grade, the remaining items of the final grade being the professional attitudes evaluation grade in the 'checklist' given by the tutor, as well as the grade regarding performance fluency. The student is also evaluated based on a report concerning one of six proposed themes, an evaluation grade of two stations in *Avaliação Crítica Integrada* (Integrated Clinical Evaluation) and a multiple choice test consisting of sixty questions containing four to five answers, one of which is correct.[1]

The visit-based teaching and evaluation model is already being applied in the field as of the 2012 - 2013 school year, and its rationale, strengths, weaknesses, opportunities and threats have already been published.[5]

Existing bibliography in Portugal already confirms the application of the present model in the GP/FM practice, the students' learning context, and supports the practice of Person-Centred Medicine using the Problem Oriented Medical Records-Subjective, Objective, Assessment, Plan (POMR-SOAP) method.[6-11]

The fact that, as of the 2015 - 2016 school-year, patient evaluation is also taken into consideration, implies it should be measured. [1]

The tutors are previously subject to training, during which both the results from the previous year and the weaknesses pointed out by students in their annual report are discussed, and the problems in need of solution are identified. After this step, the tutors are required to solve the problems raised. In this training aims, competencies and methodologies are discussed and agreed upon.

The aims of the PHC II curricular unit are:

- Equip the student with knowledge to conduct a visit in a structured manner, maximising the information gathered (noting and classifying) and evaluating the acquisition of skills;
- The process conceived includes tutor led learning in a visit environment in which the student receives previous training on the aims to achieve and, following practice and a few consultations, is required to describe the method and to assume it naturally through performance;
- Assessment is achieved by verifying the acquisition of knowledge and capabilities throughout the internship, using continuous assessment and checklist verification of the fluent and sequential performance of the method in two visits. Each evaluation visit also includes a patient evaluation.[1]

For these reasons, the aims of this paper are as follows: analysing the student's performance evaluation in the practical component within a GP/FM visit framework in the Primary Health Care II curricular unit of the fourth year of the Integrated Masters in Medicine (IMM), verifying the correlation between the patient's evaluation and the tutor's grades regarding both the performance and the fluency of performance, and identifying those areas in the tables in which teaching improvement is needed.

MATERIAL AND METHODS

An observational study was carried out by analysing the notes registered, through descriptive and inferential statistics, using Pearson's correlation with a significance level of $p < 0.05$. After verifying whether the data was normal and the Excel files were imported into the SPSS Software for Windows, version 19.0, a quartile verification was carried out.

In accordance with the aims of the PHC II curricular unit, the graduation was set for each SOAP chapter [cf. Assessment grid attached in Appendix 1 [http://www.actamedicaportuguesa.com/revista/index.php/amp/article/view/8405/4854], in: 0 = Unachieved; 3 = Yes, without flaws;

2 = Yes, with flaws. The final grade is the sum of each score/number of items to observe by chapter.

The final SOAP grade was calculated as follows: 35% for Subjective (S), 35% for Objective (O), 10% for Assessment (A) and 20% for Plan (P).

To evaluate the proper practice/fluency during the visit, the tutor graded the performance quality according to the criteria of security, thoroughness, flow and communication with the following scores, 4 = High; 2 = Average; 1 = Low. The final score is the sum of each score/number of items to observe by chapter.

The patient evaluated the student's visit in the areas below:

- 'I was able to talk about what brought me to the visit';
- 'I was examined according to my complaints';
- 'The doctor explained my problems';
- 'I understood the information the doctor gave to me';
- 'I enjoyed the visit'.

The following scores were used: 1 = 'Totally agree'; 2 = 'Mostly agree'; 3 = 'Agree'; 4 = 'Strongly disagree'; the final score is the sum of each score/number of items to analyse. The evaluation 'Not applicable/No response' was also used to prevent lowering the students' average score in those cases in which patient evaluation was unknown.

The final score of this SOAP activity was achieved following the criterion of 90% for SOAP and 10% for tutor evaluation. The patient score is worth 5% of the final score.

RESULTS

The population studied included 148 students, 48 (32.4%) of which were male. Only 120 students were evaluated by patients.

Table 1 shows the average values and their 95% confidence interval whose, for the measured numeric variables, normal distribution was verifiable.

The average grade in the Assessment and Plan and Procedures is lower.

Table 2 shows the averages and the related standard deviations of the grades within the different components measured in each SOAP evaluation area, by tutor valuation and patient evaluation. Patient evaluation is consistent among all the measured criteria. In the SOAP evaluation, 'Evolution was verified/noted' received the worst scores in S, 'Record of physical examination focused on the problem of the visit' received the worst scores in O, 'Presence of notes of Diagnostic reasoning / differential diagnostic' received the worst notes in A and 'Objective negotiation to achieve' received the worst scores in P. The best tutor evaluation fell under 'Communication'.

Table 3 shows the result of the quartile distribution for the evaluated grades, as well as the number of students and their percentage in each distribution. It can be observed that, according to patient grades, 74.2 % of students are on the best evaluation distribution, that the SOAP grade includes 29.7% in the best percentile and that SOAP with valuation has 27% of students in this distribution. The number of students in the best percentile for quality evaluation, regarding visit performance, awarded by the tutor, reached 37.1%.

Table 4 shows the correlation between the SOAP grade and the SOAP grade with valuation by the tutor, which are highly correlated, and the patient evaluation. The correlation is almost neutral and non significant.

We found a practically neutral and non significant correlation between the valuation grade by the tutor and the patient grade, as shown in Table 5.

DISCUSSION

Our research found one single study evaluating student performance under examination during a visit.[5] According to the outcomes and the regular discussion with tutors on the aftermath of this study, as well as the opinions expressed by students in their final yearly reports, it was perceived that the model addressed the needs, that the students

Table 1 - Average and standard deviation, median, minimum, maximum and confidence interval at 95% for the measured variables(*)

		S grade	O grade	A grade	P grade	Grade	Patient grade	SOAP grade(**)	Final SOAP grade with valuation(***)
N		148	148	148	148	148	120	148	148
Average		2.89	2.94	2.55	2.64	3.00	1.34	2.82	2.84
Median		3.00	3.00	2.50	2.67	3.00	1.00	2.85	2.89
SD		0.16	0.15	0.34	0.29	0.69	0.42	0.13	0.15
Min		2.33	2.25	1.50	2.00	2.00	1.00	2.35	2.32
Max		3.00	3.00	3.00	3.00	4.00	2.40	3.00	3.10
CI of 95%									
Min		2.86	2.92	2.50	2.60	2.89	1.26	2.80	2.82
Max		2.92	2.97	2.60	2.69	3.11	1.41	2.85	2.87
Percentiles	**25**	2.83	3.00	2.25	2.38	2.50	1.00	2.76	2.75
	50	3.00	3.00	2.50	2.67	3.00	1.00	2.85	2.89
	75	3.00	3.00	2.75	2.83	3.50	1.80	2.89	2.94

(*) Score: Max. possible grade of 1 for the patient grade, 4 for the evaluation grade, and 3 for the S grade, O grade, A grade, P grade, SOAP grade and SOAP grade with valuation; (**) Valuation of 35% for S, 35% for O, 10% for A and 20% for P; (***) Criteria of 90% for the SOAP checklist and 10% for tutor valuation.

Table 2 - Averages and related standard deviations of the grades within the different components measured in each SOAP evaluation area and in tutor valuation

Subjective (Max = 3)	S1	S2	S3	S4	S5	S6
Average ± sd	2.93 ± 0.26	2.93±0.25	2.93 ± 0.26	2.72 ± 0.56	2.89 ± 0.30	2.93 ± 0.26
Objective (Max = 3)	O1	O2	O3	O4	---	---
Average ± sd	2.92 ± 0.27	2.97±0.18	2.91 ± 0.34	2.97 ± 0.16	---	---
Assessment (Max = 3)	A1	A2	A3	A4	---	---
Average ± sd	2.68 ± 0.47	2.34±0.55	2.51 ± 0.50	2.68 ± 0.51	---	---
Plan and procedures (Max = 3)	P1	P2	P3	P4	P5	P6
Average ± sd	2.72 ± 0.49	2.57±0.50	2.64 ± 0.48	2.80 ± 0.40	2.49 ± 0.50	2.61 ± 0.53
Quality valuation by tutor (Max = 4)	V1	V2	V3	V4	---	---
Average ± sd	2.75 ± 0.97	2.84±0.99	2.82 ± 1.00	3.58 ± 0.82	---	---
Patient grade (Max = 1)	C1	C2	C3	C4	C5	---
Average ± sd	1.07 ± 0.67	1.07±0.68	1.14 ± 0.71	1.07 ± 0.67	1.09 ± 0.68	---

Score: S1: The student introduced himself/herself; S2: The reason for the visit/complaints was gathered; S3: The reason for the visit was verified / noted; S4: Evolution was verified/ noted; S5: Both participants fully understood the reason for the visit; S6: Written records of patient explanations; O1: Record of physical examination oriented towards the problem of the visit; O2: Record of blood pressure; O3: Record of cardiopulmonary auscultation; O4: Record of complementary diagnostic procedures; A1: Situation assessment, clarifying the problem(s) in question; A2: Record of medical consideration regarding the evolution; A3: Notes of diagnostic reasoning/differential diagnostic; A4: Record of overall feeling; P1: Global explanation of the plan for immediate procedures; P2: Explanation of the plan for immediate procedures; P3: Clarification of information to the patient; P4: Clinical record of the information given to the patient; P5: Negotiation of aims to achieve; P6: Record of aims to achieve; V1: Safety; V2: Thoroughness; V3: Fuidity and V4: Communication; C1: I was able to talk about what brought me to the visit; C2: I was examined according to my complaints; C3: The doctor explained my problems; C4: I understood the information the doctor gave to me; C5: I enjoyed the visit.

Table 3 - Quartile distribution of grades

	Patient grade	SOAP grade	Final SOAP grade with valuation	Valuation grade
n	120	148	148	148
P 25 - 50 [n (%)]*	5.00 [89 (74.2)]	14.0 [36 (24.0)]	13.7 [36 (24.0)]	10.0 [42 (28.4)]
P 50 - 75 [n (%)]*		13.8 [31 (21.0)]	14.3 [35 (24.0)]	12.0 [28 (18.9)]
≥ P 75 [n (%)]	9.00 [31 (25.8)]	14.4 [44 (29.7)]	14.6 [40 (27.0)]	14.0 [55 (37.1)]

* The same value

Table 4 - Correlation between the final SOAP grade with tutor valuation, the patient grade and the SOAP Grade

		Final SOAP grade with valuation
Patient grade	Pearson correlation	-0.078
	Sig. (2-tailed)	0.395
	N	120
SOAP score	Pearson correlation	0.904
	Sig. (2-tailed)	< 0.001
	N	148

Table 5 - Correlation between the patient's grade and the tutor's valuation grade regarding visit competencies

			Tutor valuation grade
Patient grade	Pearson correlation	1	-0.072
	Sig. (2-tailed)		0.433
	N	120	120

encouraged it, but that change was still needed, especially in the evaluation grades. Hence, both the grading and the grading procedure were changed, the latter through grouped calculation. In 2015, and following the advice of the International External Committee for Evaluation of the Integrated Masters in Medicine, patient evaluation was introduced.

Unaware of the existence, in Portugal, of other studies which allow us to know how patients evaluate the features of the visit they just had with the student, we should, nevertheless, take into consideration the biases of novelty, need to please, kindness towards the student, and desire to please the tutor, who is also the patient's doctor. The tendency of the patient's evaluation upon the average allows us to perform the analyses carried out, And the patient evaluation allowed us to verify that only 31 students, 21.7%, achieved the best evaluation percentile, which gives significance to its critical capability. It must be noted that some of the students were not evaluated by the patient, which implied the correction of the final grade without this parameter.

The SOAP performance evaluation grades, following the checklist, reveal an evidently lower average in A and P, according to our expectations considering the training status of the students, in spite of the indications given to tutors requiring the cases be accessible and, preferably, without multimorbidity or polipharmacotherapy. It must be noted that this evaluation is similar to the evaluation in the

preceding study.[5]

We point out that one of the objectives in creating this SOAP model, the creation of a flow of information which allows to understand how the patient has been evolving, is the one with the lowest grade, namely in S4 (Evolution was verified/noted) and A2 (Record of medical consideration regarding the evolution) which disagrees with the expectations of the method designer, which must allow the gathering of information and progress reasoning. Verifying this fact implies the improvement of both tutorship and the student-tutor interaction.[12]

The final SOAP grade, with the valuation of performance fluency reflects, for this evaluation, the interesting fact present in Tables 1 and 3 - how the grade of a simple "checklist" of requirements to meet is seasoned by the grade of performance fluency.

The patient evaluation, which varies between 1 (the best) and 4 (the worst), is uniform throughout all the criteria under measurement, and this will be subject to evaluation in the following years. 'Evolution was verified/noted' received the worst grades in S, 'Record of physical examination focused on the problem of the visit' received the worst grades in O, 'Notes of diagnostic reasoning / differential diagnostic' received the worst grades in A and 'Negotiation of aims to achieve' received the worst grades in P. Introduction and previous knowledge, by the students, of patient evaluation, prevented a comparison with previous years. Evaluation by tutors regarding fluency was higher in 'Communication' and lower in 'Safety' and 'Flow', which must be pointed out. This environment brings the need to create educational tactics in order to improve results, revealing better competencies. Our results focus on the performance of the visit and recording - notes and eventual classifications - of what happened and not only on measuring the correct recording by the students of signs and symptoms previously planned for a visit.

The neutral correlation between the patient's grade and the tutor's grade for competencies in a visit, as well as the final SOAP grade, must be highlighted in a first year of evaluation, in which the novelty and eventual feelings of apprehension in grading by the patient might influence the process.

The tutors, experts in the task of evaluating, might suffer from a biased relationship with the student and also from the additional bias of good grades, not wanting, as teaching agents, to have students of their own with bad grades.

This study also reveals the need to integrate the student in the execution of visits, which is important for his/her future activity. We point out that the future physician must acquire processing attitudes while performing a visit and develop communication and physical examination attitudes starting preferably from the fourth year of the IMM.

Evidencing the need for improvement in registering how the patient's status evolves and in the physical examination, it will be necessary to intervene with the tutors and the tutorship, and to train these competencies.

Given this context, this kind of study calls for additional studies in the following years, as a line of investigation, which will allow us to fully understand its worth.

CONCLUSION

For these reasons, the aims of this paper are as follows: analysing the students' performance evaluation in the practical component within a GP/FM visit framework in the Primary Health Care II Curricular unit of the fourth year of the Integrated Masters in Medicine (IMM), verifying the correlation between the patient's evaluation and the tutor's grades regarding both the performance and the fluency of performance, and identifying those areas in the tables in which teaching improvement is needed.

The process of practice in teaching GP/FM in the 2015/106 school year, including a student evaluation, allows us to identify good results and reveals the need for good competencies in registering the evolution in each case.

The global evaluation of the teaching and evaluating activity should be further kept under close eye, due to its worth for competency acquisition.

There is a neutral correlation between the patient's grade, the tutor's grade regarding visit competencies and the final SOAP grade.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

CONFLICTS OF INTEREST

The authors declare absence of conflict of interest in this paper.

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