



Fahimeh Hadavand<sup>1,2</sup>,  
Mehrdad Haghighi<sup>1</sup>, Simin  
Dokht Shoaie<sup>1,2,\*</sup>

<sup>1</sup>Imam Hossein Clinical  
Research Development  
Center, Shahid Beheshti  
University of Medical  
Sciences, Tehran, Iran

<sup>2</sup>Infectious Diseases and  
Tropical Medicine Research  
Center, Shahid Beheshti  
University of Medical  
Sciences, Tehran, Iran

\*Imam Hossein Medical  
Center,  
Shahid Madani St,  
Tehran, 1617763141  
Iran

Tel: +98 2173430  
Fax: +98 2177557069  
Email:  
Drsimin2@yahoo.com

### Comparative Study of Quality Improvement in Interns' History Taking by using a new medical history Form with Review of System Part and current one without this part

**Background:** One of the most important steps in diagnosis and treatment of diseases is taking a good medical history. Current medical history form of Ministry of Health and Medical Education in our country doesn't have Review of System part. In this research quantity and quality of Interns' recording ROS in a new form including this part was studied.

**Methods:** This is a Quasi-experimental study. In control group current medical history form without ROS part and in the cases group new proposed form including ROS part were used to take medical history by interns. Quantity and quality of ROS writing were evaluated by Infectious Disease residents and specialists. All data were compared by  $K^2$  and Fisher T test in SPSS 24 software.

**Results:** In control group, 2% of interns had written ROS, all in incorrect place, with moderate quantity. In case group, ROS was written 100% in correct place, with quality of low, moderate, good, very good as 3%, 8%, 71% and 18% in order of frequency. Infectious disease residents' and specialists' satisfaction quality as low, moderate, good, very good were 8%, 14%, 72%, 6% and 7%, 15%, 71%, 7% in order with significant difference. ( $P < 0.001$ )

**Conclusions:** In conclusion we found significant relation between quality and quantity of recording data with using medical history form with ROS part by interns. It is proposed to change current form to a new one with ROS part.

**Keywords:** Medical History Taking, Methods, Standards, Review of Systems

دراسة مقارنة لتحسين الجودة في تاريخ المتدرب باستخدام نموذج التاريخ الطبي الجديد مع مراجعة جزء النظام والنموذج الحالي بدون هذا الجزء

**الخلفية:** من أهم خطوات تشخيص الأمراض و علاجها أخذ تاريخ طبي جيد. لا يحتوي النموذج الطبي العام الحالي في بلدنا على مراجعة جزء من النظام، مما يؤدي إلى جمع بيانات غير مكتمل وتأخير في التشخيص والعلاج. في هذه الدراسة تمت دراسة كمية و نوعية تسجيل و فعالية و رضا التاريخ من قبل المقيمين و المتخصصين.

**الطريقة:** كانت هذه الدراسة شبه تجريبية. في المجموعة الضابطة تم استخدام نموذج التاريخ الحالي لوزارة الصحة والتعليم الطبي بدون قسم مراجعة الأنظمة، وفي مجموعة الحالة تم استخدام النموذج الجديد المقترح مع قسم مراجعة الأنظمة من قبل المتدربين. تمت مقارنة النتائج مع برنامج SPSS 24 في مجموعتين وتم تحليلها باستخدام Test Fisher و  $K^2$ .

**النتائج:** في المجموعة الضابطة 2% من المتدربين كتبوا ROS الكل في مكان غير صحيح، كمية معتدلة أدت إلى 2% رضا معتدل من المقيمين والمتخصصين في الأمراض المعدية. في المجموعه الحالة كانت كتابة ROS 100% في المكان الصحيح، بجودة منخفضة، متوسطة، جيدة، جيدة جداً مثل 3، 8، 71 و 18% بترتيب التكرار. جودة رضا المقيمين والأخصائيين في الأمراض المعدية منخفضة، متوسطة، جيدة، جيدة جداً كانت 8، 14، 72، 6 و 7، 15، 71، 7% بالترتيب مع اختلاف كبير في مجموعتين ( $P < 0.001$ ).

**الخلاصة:** وجدنا علاقة ذات دلالة إحصائية بين جودة تسجيل مراجعة النظام باستخدام نموذج التاريخ الطبي مع جزء ROS. يُقترح على وزارة الصحة والتعليم الطبي تغيير الشكل الحالي إلى شكل جديد مع جزء ROS.

**الكلمات المفتاحية:** أخذ التاريخ الطبي، الطرق، المعايير، مراجعة الأنظمة

### مطالعه ارتقاء کیفیت اخذ شرح حال توسط کارورزان با استفاده از فرم جدید شرح حال حاوی قسمت مرور سیستمها در مقایسه با فرم فعلی بدون مرور سیستمها

**زمینه و هدف:** یکی از مهمترین مراحل در تشخیص و درمان بیماریها را گرفتن یک شرح حال خوب است. فرم شرح حال وزارت بهداشت، درمان و آموزش پزشکی کشور ما فاقد بخش مرور سیستمها است. در این مطالعه کمی و کیفیت ثبت مرور سیستمها در فرم جدید دارای این بخش در کارورزان بررسی گردید.

**روش:** این یک مطالعه مقایسه ای شبه تجربی است. در گروه شاهد فرم شرح حال فعلی بدون مرور سیستمها و در گروه مورد فرم جدید دارای مرور سیستمها جهت اخذ شرح حال توسط کارورزان استفاده شد. کمی و کیفیت ثبت مرور سیستمها توسط دستیاران و متخصصین عفونی ارزیابی شد. تجزیه و تحلیل آماری با نرم افزار SPSS24 و تست های  $K^2$  و ANOVA ( $p < 0.05$ ) انجام شد.

**یافته ها:** در گروه کنترل 2 درصد کارورزان مرور سیستمها را نوشته بودند که همه در جای غلط با کیفیت و متوسط بود. در گروه مورد در 100 درصد موارد در محل صحیح با کمی پایین، متوسط، خوب و خیلی خوب بترتیب 3٪، 8٪، 71٪ و 18٪ و کیفیت به شکل رضایتمندی پایین، متوسط، خوب و خیلی خوب در نظر دستیاران بترتیب 8٪، 14٪، 72٪ و 7٪ و در نظر متخصصین 7٪، 15٪، 71٪ و 7٪ با اختلاف معنی دار بود. ( $P < 0.001$ )

**نتیجه گیری:** ارتباط قابل توجهی بین کمی و کیفیت ثبت اطلاعات در فرم شرح حال حاوی قسمت مرور سیستمها وجود دارد. لذا پیشنهاد می گردد فرم شرح حال فعلی را به یک فرم جدید حاوی قسمت مرور سیستمها تغییر دهند.

**واژه های کلیدی:** اخذ شرح حال پزشکی، روشها، استانداردها، مرور سیستمها

### مريضوں کی شرح حال کو نئے فرم کے ذریعے حاصل کرنا، نئے فرم میں نظام های بدن کو شامل کیا گیا ہے، ایک جائزہ

**بیگ گروئنڈ:** بیماریوں کے علاج اور تشخیص میں بیمار کا شرح حال لینا بنیادی حیثیت رکھتا ہے۔ مریض کے شرح حال میں متعدد نظام های بدن شامل ہوتے ہیں۔ شرح حال آؤٹ پیشنٹ، ان پیشنٹ اور خاص بیماریوں کا ہوسکتا ہے۔ ایران میں جو فرم استعمال کئے جارہے تھے ان میں نظام های بدن کے خانے نہیں تھے جس کی وجہ سے ناقص معلومات ملتی تھیں اور بیماری کی تشخیص اور علاج میں پریشانی ہوتی تھی۔ اس تحقیق میں نئے فرم سے شرح حال لینے اور اس سے ہونے والے فوائد پر روشنی ڈالی گئی ہے۔

**روش:** تحقیق میں دو گروہوں کو شامل کیا گیا۔ ایک گروہ نے موجودہ فرم استعمال کیا اور دوسرے گروہ نے نئے فرم کا استعمال کیا۔ ہرگروہ میں سو افراد شامل تھے۔  
**سفارش:** اس تحقیق سے معلوم ہوتا ہے کہ مریض کے شرح حال کو درج کرنے میں کمی و کیفیت میں ربط پایا جاتا تھا۔ اسی وجہ سے یہ سفارش کی جاتی ہے نئے فرم کا استعمال کیا جائے۔

**کلیدی الفاظ:** شرح حال، روش، نظام های بدن

## INTRODUCTION

Clinical education plays an important role in shaping the learner's professional competencies and allows them to apply their theoretical knowledge in practice. The purpose of clinical education is to achieve measurable changes in the students' performance of clinical tasks, as well as to motivate them to use creative thinking skills for solving problems. Considering the importance of clinical education in different fields of medical sciences, improving the quality of education requires proper management and active participation of teachers and students in clinical practices (1).

Because of the COVID-19 pandemic, it is not possible to hold face-to-face grand round meetings in various fields of rehabilitation sciences; therefore, online implementation can be effective in transferring the clinical experience and knowledge of teachers to students. For this purpose, we decided to design and implement an online grand round for students of rehabilitation sciences, including audiology and occupational therapy. Since the final objective of any educational process depends on the knowledge transfer and satisfaction of learners, we evaluated this process using satisfaction questionnaire and assessed the knowledge of learners. Also, because of differences in the nature of audiology and occupational therapy learning methods, the final goal of the present study was to compare the results of these two groups.

## METHODS

### *Study design and setting*

This is a prospective single-center quasi-experimental study. It was carried out on Interns in Infectious Disease (ID) Ward in Imam Hossein Hospital, Tehran, Iran, from October 2019 until end of January 2020. The Ethics Committee of Shahid Beheshti University of Medical Science approved the study (Ethics ID: IR.SBMU.RETECH.REC.1399.003).

### *Participants*

All Interns in ID ward were enrolled in the study in two Case and Control groups. In first phase in Control group, current medical history form of Ministry of Health and Medical Education "without Review of Systems" were used for history taking in 100 patients in ID ward by Interns. In second phase in Case group New Proposed medical history form "with Review of Systems" were used for history taking in other 100 patients in ID ward by Interns. Review of Systems included 17 organ systems as General, Skin, Head and Neck, Eye, ENT, Chest, Breast, Respiratory, Cardiovascular, GI, Urinary, Genital, Musculoskeletal, Neurology, Psychiatry, Lymphohematologic, Endocrine and Metabolic.

### *Data gathering*

Using a predesigned checklist data including "writing ROS, in correct place, quality of ROS writing as low, moderate, good, very good by writing symptoms of 0-5, 6-9, 10-14, 15-17 organ system in order, as well as Infectious disease resident and specialist satisfaction quality as low, moderate, good, very good as 0-40%, 41-60%, 61-80%, 81-100% satisfaction in order" were collected for all cases and controls

by ID specialist and 3<sup>rd</sup> grade ID resident in 2<sup>nd</sup> to 4<sup>th</sup> day of admission.

Work was completely blind and two groups were studied in separate courses. Interns in two groups didn't know about study and patients were selected consensually.

### *Statistical Analysis*

Analyses were performed using SPSS 24.0. The findings were presented as frequency (%). Pearson Chi-Square and Fisher's exact test were used for comparison. Significance level was considered as  $p < 0.05$ .

## RESULTS

Two hundred medical histories taken by Interns in ID Ward were evaluated in two control and case groups equally. There was significant difference in two groups for all variables. Interns wrote symptoms in forms with ROS in right place and higher quality with increased effectivity and satisfaction of ID residents and specialists. All data are presented in Table 1.

Most Interns also presented satisfaction of using these new Medical History Forms with ROS part, though there were no information of taking part in a study, as they were reminded to write ROS in a right place for better diagnosis and treatment. This study was blind and we could not have precise data.

## DISCUSSION

Different Medical History forms are used in some diseases with specific information, a wide variety of medical forms, each different from the others in terms of function and feature (12,13). The nature of questions is based on patient's chief complaint and severity of patient's problem. In nonemergent settings ROS is Focused or Comprehensive type. The first type is used when the patient has a specific complaint and questions would be directed to most likely involved systems. Remaining body system would not be questioned. The second type is used for general health maintenance or disease prevention care and all systems are questioned (14). Medical students in their training course need history taking and communication skills as a theoretically rich discipline in clinical performance. They have many challenges on their course to success, as managing their time, applying theory to practice, and passing exams (15,16,17). Good ROS and physical exam can identify the cause and serve as a guide for subsequent Para clinical diagnostic tests. (18).

This paper demonstrated how special attention to using a Medical History format with ROS enhances complete history taking. In control group 2% of interns had written ROS, all in incorrect place, moderate quantity resulting 2% of moderate satisfaction of infectious disease residents and specialists. In case group ROS was written 100% in correct place, with quality of low, moderate, good, very good as 3, 8, 71 and 18% in order of frequency. Infectious disease resident and specialist satisfaction quality as low, moderate, good, very good were 8, 14, 72, 6% and 7, 15, 71, 7% in order with significant difference in two groups. ( $P < 0.001$ )

**Table 1. Comparing ROS data and ID Resident and Specialist Satisfaction in Control and Case groups**

Variable		G1	G2	P.Value
1	Number	100	100	<0.001
2	Writing ROS	2	100	<0.001
3	Writing ROS in Correct Place	0	100	<0.001
Quality of ROS Writing				
4	Low (0-5 organ system symptoms)	98	3	<0.001
5	Moderate (6-9 organ system symptoms)	2	8	<0.001
6	Good (10-14 organ system symptoms)	0	71	<0.001
7	Very Good (15-17 organ system symptoms)	0	18	<0.001
Quality of ID Resident Satisfaction from ROS				
8	Low (0-40%)	98	8	<0.001
9	Moderate (41-60%)	2	14	<0.001
10	Good (61-80%)	0	72	<0.001
11	Very Good (81-100%)	0	6	<0.001
Quality of ID Specialist Satisfaction from ROS				
12	Low (0-40%)	98	7	<0.001
13	Moderate (41-60%)	2	15	<0.001
14	Good (61-80%)	0	71	<0.001
15	Very Good (81-100%)	0	7	<0.001

G1: Control Group using Form without ROS part

G2: Case group using Form with ROS part

Subjective symptoms given by the patient in ROS as opposed to the objective signs found by clinician along within the physical examination are particularly important in diagnosis and treatment of diseases. (19,20) Computer software programs have been evaluated for increasing quality of Medical history taking and better care (21). The art of medical history taking requires skill, experience, and practice along with a suitable medium as a complete medical history form (22). An important aspect of history taking is making the patients change their behavior, and be responsible for their health (23). In one study, the authors suggested that a criterion-based evaluation of the student-patient write-up is a less faculty-intensive and more reliable method of evaluating medical student data-collection skills than direct observation of the student-patient encounter (24). In another report the history obtained by medical students was deficient and generally lacked the basic skills of interviewing as failure of identification of major symptoms in 33.3% of cases (25).

Insufficient and incorrect symptoms and signs increases faults in diagnosis and treatment. Current medical history forms used in our hospitals all over country lack ROS part, symptoms aren't asked automatically, so resulting imperfect medical history.

In this research the present researchers evaluated the effect of putting ROS part completely in right place on upgrading intern's data gathering and satisfaction level of data in ID residents and physicians.

Based on the results of the present study, it seemed that there

is a significant correlation between writing symptoms, in correct place and quality of ROS; and satisfaction of ID Resident and Specialists by using new Medical History forms with ROS part. There is no similar study to compare findings.

In new medical history form with ROS part, the quality of ROS Writing was low, moderate, good and very good in 3, 8, 71 and 18 percent but the quality of Satisfaction from ROS was lower in each level as 8, 14, 72 and 6 percent in ID residents; 7, 15, 71 and 7 percent in ID Specialist in order; of course very higher than using current format of medical history without ROS part as low, moderate, good and very good equal to 98, 2, 0 and 0 percent in order of frequency both in quantity and quality of ROS writing. This lower quality in comparison to quantity of ROS writing in new format was due to being a new work; however, some interns were uninterested in, some indifferent for complete work, asking questions based on patient's complain as Focused ROS and thought it should be used for stagers and they were discontent. In contrast some interns were very interested in using this new format with ROS. Using this new format and supervision should be able to upgrade the quantity and quality of ROS writing and medical history.

Based on the results of the present study it is concluded that there is a significant correlation between insertion the correct part of ROS in Medical History form and quality of data in ROS. Change of current format of Medical History Form without ROS of Education by Vice-Chancellor of Ministry of Health and Medical Education to new format with ROS part is extremely necessary; hence, complete data

gathering and basic item of diagnosis and treatment would be accomplished.

Study was blind for Interns; some interns got much satisfaction and declared the usefulness of these forms and they were interested in using them. However, there were doubts toward the usefulness of this form by other Interns, thought they should be used for stagers and were discontent.

**Ethical considerations**

Ethical issues including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the authors. The ethics committee of Shahid Beheshti University of Medical Sciences approved this

research, ethics code IR.SBMU.RETECH.REC.1399.003.

**ACKNOWLEDGEMENT**

The authors would like to acknowledge Infectious Disease residents, Dr Neda Khabiri, Farnaz Zolfaghari, Hamideh Moadi Shahr Babaki, and Hamid Norouzi and all cooperating in evaluation of records; and also Imam Hossein Clinical Research Development Center.

**Financial Support:** This research is approved by the research committee of Shahid Beheshti University of Medical Sciences without any financial Support.

**Conflict of Interest:** None to be declare.

**REFERENCES**

1. Vivian N. Half A Century of Medical History. *Medical History*. 2007; 51:1-2.
2. Education Vice-Chancellor of Ministry of Health and Medical Education, general medicine education 2017.7.1. Available at: [http://scume.behdasht.gov.ir/uploads/pezes/hkiomoomi\\_96.pdf](http://scume.behdasht.gov.ir/uploads/pezes/hkiomoomi_96.pdf). Persian.
3. Poorgharehkhani A, Hekmatpu D, Mahdavian N, Zarie M, Karimi O. Exploration of Emergency Physician's Experiences on Barriers of Precise Patient History Taking and Physical Examination: A Qualitative Study. *Research in Medical Education* 2017;8(1):3-11. Persian.
4. Kameli M.E, Vahedi Barzaki A, Behtaj F, Javadi Darabad M, Meidani Z, Ganjali R, Hosseini M, Mirzaei M. Documentation Guidelines of Medical Records in Ministry of Health and Medical Education, 2017April. Available at: <http://iph.iuums.ac.ir/files/iph/files/2.pdf>. Persian.
5. Gaffari R, Amini A, Yazdani Sh, Alizadeh M, Salek Ranjbarzadeh F, Hassanzadeh Salmasi S; Comparative Study: Curriculum of Undergraduate Medical Education in Iran and in a Selected Number of the World's Renowned Medical Schools. *Iranian Journal of Medical Education* 2012;11(7):819-31. Persian.
6. Education Vice-Chancellor of Shahid Beheshti University of Medical Sciences, general medicine education. Available at (<http://msp.sbm.ac.ir/index.jsp?siteid=74>) (Persian & English)
7. Biographical description of the history and physical examination. Hospital Forms, Arash Printing House. Available at: <http://chaparash.ir>
8. Mashoufi M, Rostami Kh, Mardi A. Documentation of Medical Records by Physicians in the Hospitals under Ardabil University of Medical Sciences. *Journal of Ardabil University of Medical Sciences*. 2006;6(1):73-77. Persian.
9. Khazaei Z, Khazaei T, Namayi M. H. Jananeh E. The effective and preventive factors of taking patients' history from the viewpoint of the students of Birjand Medical School in 2010-2011. *Journal of Medical Education and Development*. 2013; 8(1): 14-21. Persian.
10. Sobhani A, Shojaei H, Vaghari S.A, Poormirzaei Sh, Aryanfar B, Ramezani T. Assessment of record summaries and history taking in internal ward. *The journal of Qazvin University of Medical Sciences, (New Name: Journal of Inflammatory Diseases)* 2000;3(4):52-58. Persian.
11. Kiviri W, Wong R, Davis k, Rahimi L, Nyirasebura D, Bizimana T. Improving Patient Medical Record Organization in a Hospital Intensive Care Unit in Rwanda. *Global Journal of Management and Business Research. Administration and Management*. 2015; (15):13.
12. McCulloh R.J, Commers T, Williams DD, Michael J, Mann K, Newland J.G. Effect of Combined Clinical Practice Guideline and Electronic Order Set Implementation on Febrile Infant Evaluation and Management. *Pediatr Emerg Care*. 2021;37(1): e25-31
13. Jiang BS, Yao PT, Ge YB, Yang M, Sun X, Ren JS, et al. Systematic review of methodological quality and reporting quality in gastric cancer screening guidelines. *Zhonghua Yu Fang Yi Xue Za Zhi*. 2020; 54(3):314-19.
14. Wiggins Petersen S, Rhoads J. *Advanced Health Assessment and Diagnostic Reasoning*. 2nd ed, Jones & Bartlett Publishers; 2014.
15. Jevon P, Odogwu S. Medical student survival skills. History taking and communication skills. Hoboken, NJ: Wiley-Blackwell; 2020.
16. Ian M. *Medical history: Theory and history*. London: Red Globe Press, Ulster University; 2018.
17. Roh H, Lee K, Eo E, Hong YS, Lee H, Jang BW, et al. Development of guide to clinical performance and basic clinical skills for medical students. *Korean J Med Educ*. 2015; 27(4):309-19. Korean. (Abstract).
18. Jane M. *Orient Sapira's art & science of bedside diagnosis*. 5th ed. Philadelphia: Wolters Kluwer; 2019.
19. Tuite PJ, Krawczewski K. Parkinsonism: a review-of-systems approach to diagnosis. *Semin Neurol*. 2007; 27(2): 113-22.
20. Lynn S. Bickley, Peter G. Szilagyi, B Bates. *Bates' Guide to Physical Examination and History Taking*. Lippincott Williams & Wilkins; 2009.
21. Zakim D, Alscher MD, Schwab M, Schwalm B, Sundberg CJ. Medical history taking via computer can provide better care and research. *Lakartidningen*. 2014; 111(43):19025.
22. Charles E. Becker. Key Elements of the Occupational History for the General Physician. *West J Med*. 1982; 137(6): 581-82.
23. Bridge S.A competency history--an additional model of history taking. *Aust Fam Physician*. 2011; 40(9):735-8.
24. Woolliscroft JO, Calhoun JG, Beauchamp C, Wolf FM, Maxim BR. Evaluating the medical history: observation versus write-up review. *J Med Educ*. 1984; 59(1):19-23.
25. Ahmed AM. Deficiencies of history taking among medical students. *Saudi Med J*. 2002; 23(8):991-4.