

Presentation of Clinical Cases by Undergraduate Physicians During the On-call Handover, Ethnographic Study

Presentación de casos clínicos por médicos de pregrado en la entrega de guardia, estudio etnográfico

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Summary

Objective: to describe an on-call handover and presentation of clinical cases in the pediatrics service and its impact on learning in undergraduate medical interns. **Methods:** qualitative study with ethnographic approach, with the participation of undergraduate medical interns who rotated through the pediatrics service, during the bimonthly March-April 2019, and attending physicians who participated in the on-call handover. Observations, video recordings and interviews were carried out, subsequently an ethnographic analysis was performed. **Results:** during the on-call period, the presentation of clinical cases was identified as a formative activity; the intern physicians presented medical histories and admission notes prepared during the on-call period; the attending physicians participated actively through questions, comments, recommendations, and explanations that served as a guide for the students to achieve greater learning in professional competencies. **Conclusion:** the presentation of clinical cases during the on-call handover was a key formative activity in the development of two professional competencies in medical practice, diagnosis and treatment.

Keywords: Clinical Clerkship, Cultural Anthropology, Clinical Competence.

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Resumen

Objetivo: describir la entrega de guardia y la presentación de casos clínicos en el servicio de pediatría y su impacto en el aprendizaje en médicos internos de pregrado. **Métodos:** estudio cualitativo con enfoque etnográfico, participaron médicos internos de pregrado que rotaron por el servicio de pediatría durante el bimestre marzo-abril de 2019 y médicos adscritos que participaron en la entrega de guardia. Se realizaron observaciones, videograbaciones y entrevistas, posteriormente se realizó un análisis etnográfico. **Resultados:** durante la entrega de guardia se identificó la presentación de casos clínicos como una actividad formativa, los médicos internos presentaron historias clínicas y notas de ingreso elaboradas durante la guardia, los médicos adscritos participaron de forma activa mediante preguntas, comentarios, recomendaciones y explicaciones que sirvieron de guía para que los alumnos logaran un mayor aprendizaje en competencias profesionales. **Conclusión:** la presentación de casos clínicos en la entrega de guardia fue una actividad formativa clave en el desarrollo de dos competencias profesionales en la práctica médica como son diagnóstico y tratamiento.

Palabras clave: internado clínico, antropología cultural, competencia clínica

Introduction

Since its origins, medical education has been carried out in a tutorial manner, as was done by Hippocrates, Galen and, likewise, in the school of Salerno.^{1,2} At the end of the 19th century, medical education was formalized in Europe and the need to complement theory with practice was seen.²

In Mexico, medical education from its beginnings adhered to the Galen-Hippocrates Renaissance tradition, based on clinical practice. In 1912, the term internship appeared and it was established that students should remain in hospitals during the last year of their training.³ Currently, the first four years of medical school include the study of basic, socio-medical, and clinical subjects in university classrooms, in addition to laboratory, health units or community practice. In the fifth year, the undergraduate medical internship takes place exclusively in first, and second health care level units.⁴⁻⁶ The undergraduate medical internship generates great expectations in the students, who are fearful, nervous, and enthusiastic prior to the start of the internship, however, they expect to increase their knowledge, skills, and clinical reasoning during this period.⁷

Different problems have been documented during this process, such as dissatisfaction with the programmed teaching, and those responsible for the development of the internship, lack of organization, lack of interest of the basic physicians in teaching, defects in patient care that negatively influence the physician's training,⁸⁻¹¹ failure to respect meal and class schedules, harassment, violence, mistreatment, discrimination and sexual harassment,⁹ excessive workload, and administrative procedures that do not allow the adequate development of the necessary competencies for the medical intern, as well as an educational environment that is not very favorable for reflection, debate, and the exercise of critical thinking.^{10,11}

There is another problem in various evaluations carried out before, during, and after the medical internship, in

which low levels of knowledge have been reported in undergraduate interns in different subjects.¹²⁻¹⁶ In this context, it has been pointed out that planned educational strategies have a positive effect on the learning of physicians in training.¹⁷⁻²⁶ However, these strategies are mainly carried out in the classroom, which can be very useful; but the undergraduate medical internship is a mainly practical stage where undergraduates learn in front of the patient under the guidance of more experienced physicians, and this activity is supported by various learning theories in which qualitative factors are fundamental.²⁷⁻³¹

Due to the aforementioned context and the importance of developing useful competencies for Mexican general practitioners,³² the objective of the present study was to describe on-call handover, and the presentation of clinical cases in the pediatric service, and its impact on learning in undergraduate medical interns.

Methods

A qualitative study with ethnographic approach conducted in the pediatrics service of the General Regional Hospital No. 1 *Vicente Guerrero*, of the Mexican Institute of Social Security in Acapulco, Guerrero. The participants were sixteen undergraduate medical interns (UMI) who rotated during the bimonthly March-April 2019, and physicians attached to that service who participated in the on-call handover. As this was a qualitative study, no sample size calculation was performed.

The study examined the training practices in the pediatrics service, based on the assessments and evaluations expressed by recently graduated UMIs from the hospital in a telephone survey.

The central question was: “Which was the service where you learned the most, and why?” Family medicine services was the most mentioned, because there are classes every day, the interaction with the residents, and their relationship with social service; they also mentioned pediatrics, because of the on-call, and the performance of admissions, as well as the demand, teaching, and patient care by the physicians. Pediatrics was selected because shift rotation is performed at the host hospital, contrary to family medicine that is performed at another unit.

Data were collected through observations and video recordings of the on-call activity in the pediatrics classroom, and interviews with UMI about the activities they performed during their rotation in that service, the contributions to their training and how to improve it. One group interview was conducted in the pediatrics classroom, and seven individual UMI interviews were conducted in the hospital’s health education coordination office.

The fieldwork started in March 2019. The UMIs and assigned physicians were explained the objectives and methodology of the research, and their informed consent was requested verbally and in writing.

Observations were made during the two-month period March-April 2019; a general observation was made in the pediatrics service during the first week of rotation. Different activities in which the UMIs and assigned physicians participated were observed, among these the following stand out: the introductory class, the on-call handover, the scheduled theoretical classes, as well as the visit pass in the schoolchildren’s module. It was identified the pediatrics

service as one of the activities with high probabilities of UMI training due to the processes generated during the presentation of clinical cases constructed and presented by the UMIs, so the research focused on this activity. Interviews were conducted with seven UMIs, and ten hours of on-call handover were video-taped. Subsequently, an ethnographic manual analysis was carried out, which began with an analytical reflection, to continue with the selection, reduction, organization and categorization of the data. This was based on the following perspectives: Vigotski’s sociocultural theory,²⁷ Lave and Wenger’s legitimate peripheral participation,²⁸ Wenger’s communities of practice,²⁹ Roy D. Pea’s distributed intelligence,³⁰ and Jan Nespór’s knowledge in motion.³¹

The research protocol was evaluated by the local health research committee, and by the local IMSS health research ethics committee, authorized with registration number R-2020-1102-002. Prior to the study, all participants were informed of the objectives, benefits, and possible drawbacks of the research. Participation was voluntary, a letter of informed consent was signed, and they were informed that they could leave the study whenever they decided to do.

Results

On-Call Handover in the Pediatrics Service

During the on-call handover, the UMIs presented clinical cases of patients admitted to the service the previous day; other topics related to the on-call were also discussed, such as: evolution of seriously ill patients previously admitted, laboratory, and x-ray examinations, patient census, among others; the main activity was the presentation of clinical

cases by the UMIs and their analysis together with the physicians assigned to the pediatrics service.

The on-call handover took place from Monday to Friday, at 07:30 a.m., with a duration of approximately one to one and a half hours. It was held in a well-lit classroom on the fourth floor of the hospital, approximately 4 meters wide by 6 meters long; it has a projector screen, a desktop computer, a white acrylic blackboard, a negatoscope, and weight and height charts. On one side of the classroom there are tables and chairs for the assigned physicians and on the opposite side there is a sofa and several chairs for the students. The classroom looks comfortable.

Clinical Case Presentations by Undergraduate Medical Interns

The presentation of clinical cases during the on-call handover consists of the clinical history, admission note, and bibliographic review of a patient who has been admitted to the service during the on-call. Pediatricians share the files of patients who were admitted and will be presented. An attending physician reviews the file while the UMI reads the copy of his or her note and the others listen attentively. As the case is presented, the attending physicians give their opinions and ask questions, first the physician who has the file, and then the others; although this order is not always followed, since any of them can intervene when required, including the UMIs themselves.

In this activity, instruments of the physician’s daily professional work that are carried out by the UMIs in the medical practice are identified, the main ones being the preparation of medical records, and medical admission notes.

Preliminary Preparation of Medical Records and Admission Notes

During the on-call, the UMIs prepare medical histories, and admission notes of the patients to be presented at the handover, the first includes all the patient's history, and clinical evolution since the onset of the disease, physical examination, previous and current diagnoses, treatments received, tests performed, plan, and prognosis. The admission medical note is a summarized version of the clinical history, mainly focused on the signs and symptoms of the disease, diagnosis, plan, and prognosis.

In the studied context, these activities serve as a training tool for the UMIs, who are asked and explained, by the teacher of the area in the introductory class to the service, to carry them out in detail, since they will later have to present them at the on-call handover.

Learning Tools Identified During On-Call Handover

The tools that were identified during on-call handover were: medical interrogation, physical examination, admission notes, medical records, laboratory, imaging tests (x-rays), clinical practice guidelines, medical classification scales, scientific medical articles, and books.

During on-call handover, UMIs learn to mobilize the knowledge necessary to make a diagnosis, and establish a treatment for patients.

The way in which on-call handover is performed in the pediatric service leads UMIs to learn, and deepen their diagnostic skills. By means of the resources mentioned below, learning is promoted and the UMIs are made to move towards a greater knowledge of medical practice, specifically diagnosis, and treatment.

Presentation and Analysis of Clinical History, and Admission Note

In the on-call handover, clinical history and admission notes are fundamental for the presentation of clinical cases. When preparing the first two, UMIs mobilize and integrate the required knowledge, tools and inputs (patient questioning and physical examination, review of previous notes, laboratory and x-ray, search, and retrieval of relevant literature). Both the clinical history and the admission notes are essential to interpret and determine the patient's diagnosis and treatment, see Table 1.

Participation of Expert Professors

The attending physicians act as guides, based on the case file, guiding, questioning, and discussing cases with the UMIs. With their comments they help the UMI

Table 1

	Presentation of a Clinical Case by an Undergraduate Medical Intern during the On-call Handover
The student stands in front of the assigned physicians and reads the admission note he made during his on-call period.	"LV is an infant female patient, who is 4 months and 6 days old, weighing 2.8 kg. As non-pathological personal history, the child lives across the street from a cement plant. Pathologic personal history: product of 3 gestations, the mother had 2 abortions and 1 caesarean section. She was born via abdominal route, prematurity [sbs] with 32 (wog), difficult labor, cardiorespiratory arrest at birth, hospitalized in the NICU, and in pathological nurseries for two months, during the hospitalization she presented seizures, and urinary tract infection, documenting in a urine culture <i>Klebsiella pneumoniae</i> . As diagnosis I wrote bronchiolitis; I integrate this diagnosis based on the patient's history, clinical and para-clinical study. The current condition began 6 days ago, on March 2, after vomiting on 2 occasions of gastro alimentary content, she vomited breast milk. For this reason, she was brought to this unit, where she was evaluated; she did not present respiratory distress, so she was treated symptomatically, and discharged. The mother reported that on Wednesday she started coughing, and was brought to the pediatric emergency room, and treated on an outpatient basis. Today, she is brought again to the emergency room because of persistent productive cough, refusal of food, without fever. After physical examination, I found the patient to be drowsy, not very reactive, with regular hydration status, good skin, and integument coloration; coughing was heard, with no evidence of respiratory distress, symmetrical respiratory movements, lung fields with respiratory sounds, basal expiratory wheezing, predominantly on the right side, rhythmic heart sounds, no murmurs, the rest normal. The patient attended the emergency room for the third consecutive time this week and for this reason she was hospitalized for her management".

wog: weeks of gestation. NICU: neonatal intensive care unit.

Table 2. Participation of Attending Physicians During the Presentation of a Clinical Case in the Pediatrics Service
Dialogue between medical intern and attending physicians about the case of probable bronchiolitis presented in table 1

P1. AP1:	Reviews the file for a few seconds and comments: And if it wasn't bronchiolitis, what do you think it was?
P2. UM1:	Well, one of the probabilities is the reactivity to cement smoke, because the mother says she lives right in front of the cement plant, that is located in the Sabana neighborhood.
P3. AP2:	Maybe, yes!
P4. AP1:	What else, because in cement there is no smoke.
P5. UM1:	Pardon me?
P6. AP1:	Cement does not make smoke
P7. UM1:	I asked her if she also burned garbage, and she said that they don't burn garbage nearby.
P8. UM1:	I asked if her husband smokes or burns garbage, and she also said that they have a Chihuahua dog that is always in the yard, and she has stray cats that get into the house.
P9. AP1:	What else?
P10. UM1:	It looks like the children with pneumoconiosis, due to cement smoke.
P11. AP1:	Let's see, she was premature, she has no fever, she was just coughing and wheezing, and you said something about what was the first thing the girl had.
P12. UM1:	The first thing she had?
P13. AP1:	The first thing, I mean, according to your admission note.
P14. UM1:	Oh, vomit.
P15. AP1:	What comes to your mind?
P16. UM1:	That she could have bronchial aspirated!
P17. AP1:	When a baby starts to present this and there is no fever, although the clinical practice guidelines say that there may or may not be fever, it is an infectious disease, there must be fever, what happens is that it is a mild fever, it is not a strong fever of 39, that is, it is a feverish fever, lost in space, but there is a history of fever. If there is no history of fever, nothing, nothing, that is, zero fever, think of something else. What else could it be?
Regarding the same case and its treatment.	
P18. UM1:	Methylprednisolone, 6 mg, IV: single dose, at 2.1 mg kg/day, and methylprednisolone 1.5 mg, IV every 6 hours, at 2.1 mg/kg/day, inhalotherapy.... The AP interrupts.
P19. AP1:	Let's see, wait a minute, okay, just, you are telling me that methylprednisolone, the first one is a single dose, so you don't calculate kg/day?
P20. UM1:	Kg/dose
P21. AP2:	Kg/dose
P22. AP1:	Kg/dose, ok, that's it. The other one Kg/day!
P23. UM1:	Inhalation therapy; micro-atomization with Combivent, 0.1 ml+ 5.5 ml of physiological sol. 0.9% every 8 hours, aspiration of secretions... The AP interrupts
P24. AP1:	Wait
P25. AP2:	Wait
P26. ap2:	What is the Combivent?
P27. AP1:	We left it for your last on-call handover
P28. UM1:	What is Combivent? It is Ipratropium bromide and salbutamol.
P29. AP1:	Very well, how is the presentation? How is it given? How is it calculated? How is it eaten? Is it well calculated? Is it wrong calculated? Even if it is a atomization, it is a medicine, and if it is a medicine, it is calculated. So, how is it calculated?

UM1: Undergraduate Medical Intern 1, AP1: Attending Physician 1, AP2: Attending Physician 2, P: Paragraph, iv: intravenous.

Table 3. Opinions of Four Undergraduate Medical Interns about On-call Handover in the Pediatrics Service

UMI1	"Well, they make us review the clinical practice guidelines, how we would handle the patient, examine them, obviously, see the conditions for which most children are hospitalized, and the questions we are asked more, according to what we really need to know".
UMI2	"For me, the on-call handover is a learning experience, more than anything else because when we make a presentation of a patient, we really have to check the patient, see what symptoms he/she has, explore him/her well to see if we can find anything else. Also, at the time of making the admission note, it makes us review the clinical practice guide, sometimes we can't, because we have a lot of admissions, or we have a lot of pending cases, but in general, even if we just give it a quick read, and see more or less what it is about, or the most important part of the guides, when we have the time to review them, that is a learning experience".
UMI2	"Here, AP do contribute, and they make us think a lot, I also like that, and we learn".
UMI3	"I feel that it is like the attitude of the physicians who are here, for example in the on-call handover, here several physicians come in, there (in reference to another service) they also used to come in, but sometimes they do not. Moreover, the way they demand from us is different from internal medicine, because here they tell us, they explain to us, and I don't know, the way they ask us for things, sometimes they do demand us, but the way they tell us is different, or they give us more chance, or some of the handovers, not all of them are like scolding us, sometimes there is a laxity between handovers, but they correct us".
UMI4	"I like to make presentations, the secret is to make your story." "Even if we make a presentation, we don't do them" "We just ask questions for the sake of asking, and we don't try to integrate a diagnosis, we just ask what is necessary, and the physician during the on-call handover makes us see that what we ask, it's not enough, and so in the next presentation, we do better, and ask more things".

to integrate and expand their understanding of the diseases in specific patients.

The questions of the attending physicians help to understand and comprehend the cases, which are very useful for the students, they serve as a guide to find paths to the diagnosis and understanding of the necessary management; see table 2: paragraphs 1, 4, 9, 15, 19 and 29. Teachers' explanations are valuable because they fall in a context of searching for UMIS, i.e., when the students have exhausted their answers and are searching for them, the attending physicians disseminate part of their knowledge in the classroom, so that the students understand the situation analyzed; see Table 2: paragraphs 11 and 17.

The interaction with the assigned physicians is an important resource of the on-call handover, the discussions that take place, with the agreements or disagreements they make, promote understanding and awaken doubts in the UMIS; this clarifies many of the situations raised in the case presentation, or sometimes leave uncertainties, which will serve to leave tasks such as the review of clinical practice guidelines or other documents, and thus complement the learning of the UMIS; see table 3: opinions of the UMIS.

Discussion

On-call duty handover is considered a daily activity in hospital medical services for which there is no normatively defined format; in general, it involves the outgoing shift physicians handing over the service to the incoming shift physicians so that they can learn about the patients who are there. In the context in which the observation took place, this on-call handover becomes a formative space in which the UMIS, who act as teachers,

improve their learning with the help of tools, and the guidance of the assigned physicians.

From Lave and Wenger's theoretical perspective, UMIS participate peripherally in the community of practice of expert physicians. Attending physicians, insofar as they guide UMIS' access to the mastery of different tasks involved in medical practice. On this matter, the presentation of clinical cases, the preparation of medical histories, and extensive admission notes, as well as the required activities, and uses of tools are formative scaffolds that are deployed or mobilized in the on-call handover. The attending physicians thus support the UMIS in gradually mastering with autonomy the medical tasks that they now perform with their help.²⁷⁻²⁹

As it can be observed, with both the empirical material and the tools and resources identified, it becomes evident, through Roy Pea's theories, that communities of practice are not reduced to the spatial, temporal, and physical coincidence of some people, but that there is a coexistence of interests, and a common enterprise around which there is conversation or dialogue, and shared understandings are achieved, at the same time that they co-participate in the production of tools or resources for the realization of the enterprise or practice that they share. In this sense, they are means that provide UMIS with access to shared understandings in the community of expert physicians about conditions or diseases, their manifestations, ways of diagnosing them, assessing their severity or treating them. These tools are identified as clinical practice guidelines, books, and scientific articles that serve as references for the analysis and understanding of the clinical cases presented.³⁰

The presentation of clinical cases and the bibliography used and suggested by the attending physicians create the context for them to come into contact with remote and diverse members of the medical practice community, whose contributions have something to say and contribute to UMIS' efforts to understand, and diagnose the conditions of the patients they treat and to determine the most appropriate medical treatments.³¹

In educational research focused on medical education, there is little qualitative work. To the best of our knowledge, materials describing the participation of UMIS in on-call handover were not identified; however, the importance of situated learning and participation in communities of practice in the training of health professionals has been documented in theoretical reviews.^{33,34} One study was found in a London Hospital on surgical trainees in the operating room,³⁵ another on the learning of medical, and nursing students in an Emergency Unit in Sweden,³⁶ and another on initial clinical learning in medical students at a university in Chile.³⁷ Like this study, they coincide in the relevance of the participation of students in communities of practice, their integration into the cultural context, and guidance by experts to achieve the desired learning.

In sum, the identified tools during the on-call handover, the participants distant in time and space, the authors of the literature consulted by the UMIS, and the participants present in this community of practice converge so that the UMIS master or appropriate the competencies to perform two basic tasks of medical practice: diagnosis and treatment, and make visible to the UMIS practice processes that are routine for experts.²⁷⁻³¹

The sample size is considered to be a limitation, since this work is limited to the context studied, in addition to the fact that, since this is a qualitative study, the researcher's perception may have an influence.

Conclusions

The presentation of clinical cases in the on-call handover is a very important training activity within the medical practice, which involves an analysis of the patient's history, clinical picture, and the described literature described in which the participation of the assigned physicians and the use of the identified tools is fundamental, through which the learning of the medical practice is promoted, mainly the diagnosis and treatment.

Authors' contributions

B J-M: original idea, problem statement, methodology, field work, data analysis, writing of the article; H N-H: advice in the elaboration of the work, revision of the article.

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Conflict of interest

All authors declare not having conflict of interest.

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